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COMMERCIAL FISHERIES REVIEW

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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
G. A. Albano and H. Beasley, Assistant Editors

Address correspondence and requests to the: Chief, Fishery Market News Service, U.S. Bureau of Commercial Fisheries, 1815 North Fort Myer Drive, Room 510, Arlington, Va. 22209.

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No. 2

COMMERCIAL FISHERIES REVIEW

February 1965 Washington, D. C. Vol. 27, No. 2

EXPERIMENTAL TRAWLING FOR HIGH-SEAS SALMON

By Charles J. Hunter*

ABSTRACT

A large trawl, known as the "Cobb" Pelagic Trawl-Mark II, was tested near Adak, Alaska. Two Bureau of Commercial Fisheries research vessels were used in this experiment. One vessel fished the trawl to determine its capability to capture salmon on the high seas, and the other vessel fished gill nets to determine the availability of salmon.

Trawl catches were not large enough for research purposes, but further modification of the trawl may improve its efficiency.

The trawl catch consisted predominantly of small immature sockeye salmon. The gill nets, on the other hand, captured both small and large immature sockeye and chum salmon, but the catch consisted predominantly of large immature chums. When catches of small immature sockeye from both the trawl and gill nets were reduced to units-of-effort, the same trend in abundance was indicated by both types of gear.

Tows made at night and tows made in an easterly direction caught greater numbers of fish.

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INTRODUCTION

A large midwater trawl, referred to as the "Cobb" Pelagic Trawl-Mark II (McNeely 1963), is being developed by the U. S. Bureau of Commercial Fisheries.[1/] The trawl is designed to sample all types of pelagic fish, and if successful in taking large quantities it will be used commercially. Some success has been achieved with this trawl in fishing for hake (Merluccius productus) off the coast of California, and large hauls of jack mackerel (Trachurus symmetricus) and dogfish (Squalus acanthias) have also been taken close to the Washington coast (McNeely 1963). A few salmon have been taken in test trials prior to this study, but the trawl had not been tested in an area, and at a time, when an abundance of salmon was known to be available.

During the past 8 years, floating gill nets and purse seines have been standard sampling gear used in capturing salmon on the high seas. Samples have been used for studying the distribution and abundance of salmon in the North Pacific Ocean and the Bering Sea. More recently long-lining has been used by the Canadians to capture salmon for tagging experiments (Neave, Manzer, Godfrey, LeBrasseur 1962). All three types of gear have been effective sampling tools, but a trawl should have advantages in certain situations for improving the sampling program. These would include (1) more rapid recovery of gear during adverse weather, (2) reduced cost of gear, and (3) greater flexibility in depth of fishing.

*Fishery Biologist (Research), Biological Laboratory, U. S. Bureau of Commercial Fisheries, Seattle, Wash.

1/The "Cobb" Pelagic Trawl is under development by the Exploratory Fishing and Gear Research Base, Seattle, Wash. The Biological Laboratory, and the Exploratory Fishing and Gear Research Base, Seattle, Wash., cooperated in conducting the tests of the trawl reported here.

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To evaluate the effectiveness of a midwater trawl for capturing salmon on the high seas, the "Cobb" pelagic trawl was tested during the month of August 1963 in an area south of Adak, Alaska. The area shown in figure 1 was chosen for the study because of the concentration of salmon known to be located along the southern side of the Aleutian Islands during the month

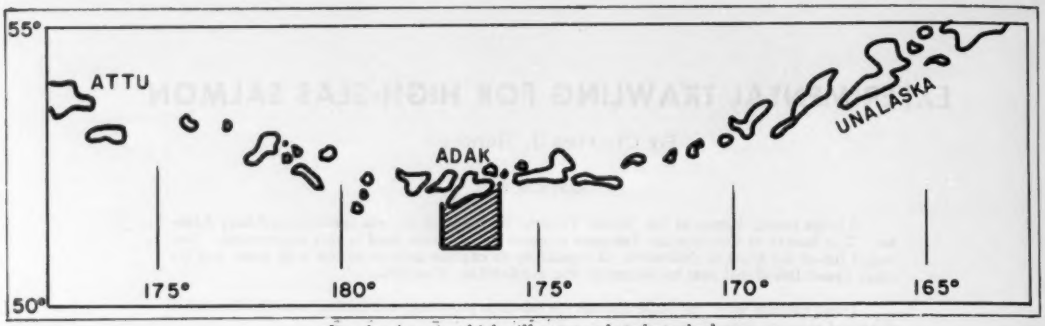

Fig. 1 - Area in which gill net-trawl study took place.

of August. By fishing in proximity to gill nets, it was possible to determine, to some extent, the availability of salmon to the trawl and to compare the fishing capabilities of the two types of gear. Other tests were conducted to study the relationship of direction of tow to catch, and the effects of daylight and darkness on the catch.

FISHING GEAR AND METHODS

The John N. Cobb (fig. 2), a 93-foot purse seine-type vessel (Ellson 1950), fished the pelagic trawl, and the George B. Kelez (fig. 3), a converted Navy light cargo vessel (French 1963), fished the gill nets.

Fig. 2 - The U. S. Bureau of Commercial Fisheries research vessel John N. Cobb hauling the pelagic trawl.

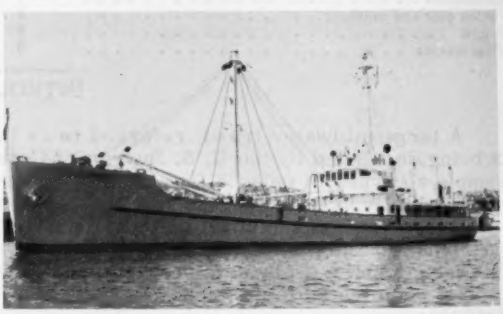

Fig. 3 - The U. S. Bureau of Commercial Fisheries research vessel George B. Kelez.

The gill net string (Larkins 1963a) was made up of 50-fathom shackles, 4 fathoms deep, and consisted of four mesh sizes of multifilament net: $5\frac{1}{4}$-inch; $4\frac{1}{2}$-inch; $3\frac{1}{4}$-inch; and $2\frac{1}{2}$-inch (fig. 4). In addition four experimental monofilament nets ($3\frac{1}{4}$-inch and $4\frac{1}{2}$-inch) were used but were not considered a part of this study. Usually, 18 shackles (fig. 4) of gill net were used, but when catches became inadequate 32 shackles were used to increase the sample size.

The length of the trawl (McNeely 1963) was 240 feet. The opening was estimated to be 75 feet wide and 90 feet high. It was constructed of 6-inch mesh in the wings, 3-inch mesh in the main body, and $3\frac{1}{4}$-inch mesh in the cod-end (fig. 5). A $\frac{1}{2}$-inch mesh liner (35 feet long) was used during the first 26 tows to retain the smaller marine animals. This liner was removed during the remaining tows to reduce clogging by jelly fish. During the first 26 tows, 51 Phillips trawl floats were used on the headline, but during the remaining 17 tows, 81 floats were used to increase the flotation of the headline.

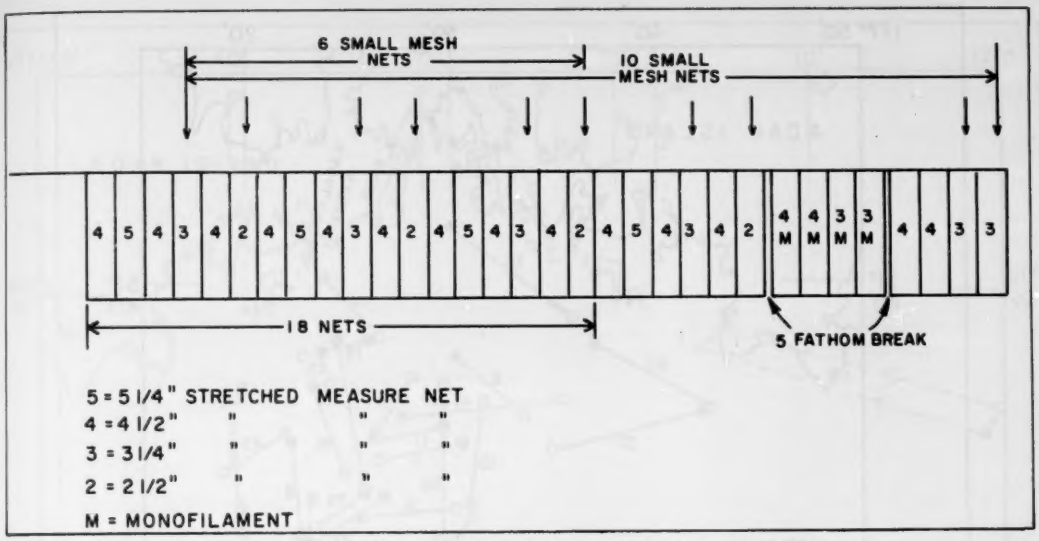
6 SMALL MESH NETS
10 SMALL MESH NETS
4 5 4 3 4 2 4 5 4 3 4 2 4 5 4 3 4 2 4 5 4 3 4 2 4 M 4 M 3 M 3 M 4 4 3 3
18 NETS
5 FATHOM BREAK
5 = 5 1/4" STRETCHED MEASURE NET
4 = 4 1/2" " " "
3 = 3 1/4" " " "
2 = 2 1/2" " " "
M = MONOFILAMENT

Fig. 4 - Gill net make-up for gill net-trawl study during the summer of 1963.

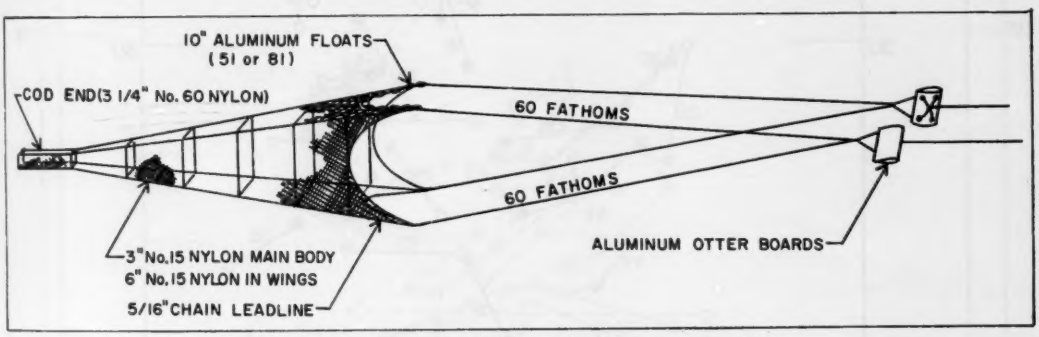
10" ALUMINUM FLOATS (51 or 81)
COD END(3 1/4" No. 60 NYLON)
60 FATHOMS
60 FATHOMS
ALUMINUM OTTER BOARDS
3" No.15 NYLON MAIN BODY
6" No.15 NYLON IN WINGS
5/16" CHAIN LEADLINE

Fig. 5 - "Cobb" Pelagic Trawl-Mark II, showing method of rigging.

Four 1-hour tows in each 24-hour period were usually considered a day's fishing effort. Longer tows up to 4 hours were also made, but 1-hour tows appeared to produce about the same measure of success. Depending on the weather conditions, the number of tows-per-day ranged from 0 to 6. Although it was planned that at least one tow would be made toward east, south, west, and north each day, it was evident early in the cruise that this could not be accomplished because of adverse weather conditions. In general, tows were made as close as practicable to the gill-net positions (usually within 5 miles) with allowance for maneuverability of the vessel (figs. 6 and 7).

The experiment was programmed to use a minimum of 20 fishing days, but weather conditions permitted trawling on only 14 days. Four or more tows were possible during only 7 of the 14 days. This seriously limited the amount of information obtained.

Trawl and gill-net catches were analyzed by reducing each catch to a unit-of-effort. The catches were computed in numbers of fish caught per hour. Six small mesh nets (fig. 4) were used as the basis for determining unit-of-effort for gill-netting, since this was the number fished during most of the study.

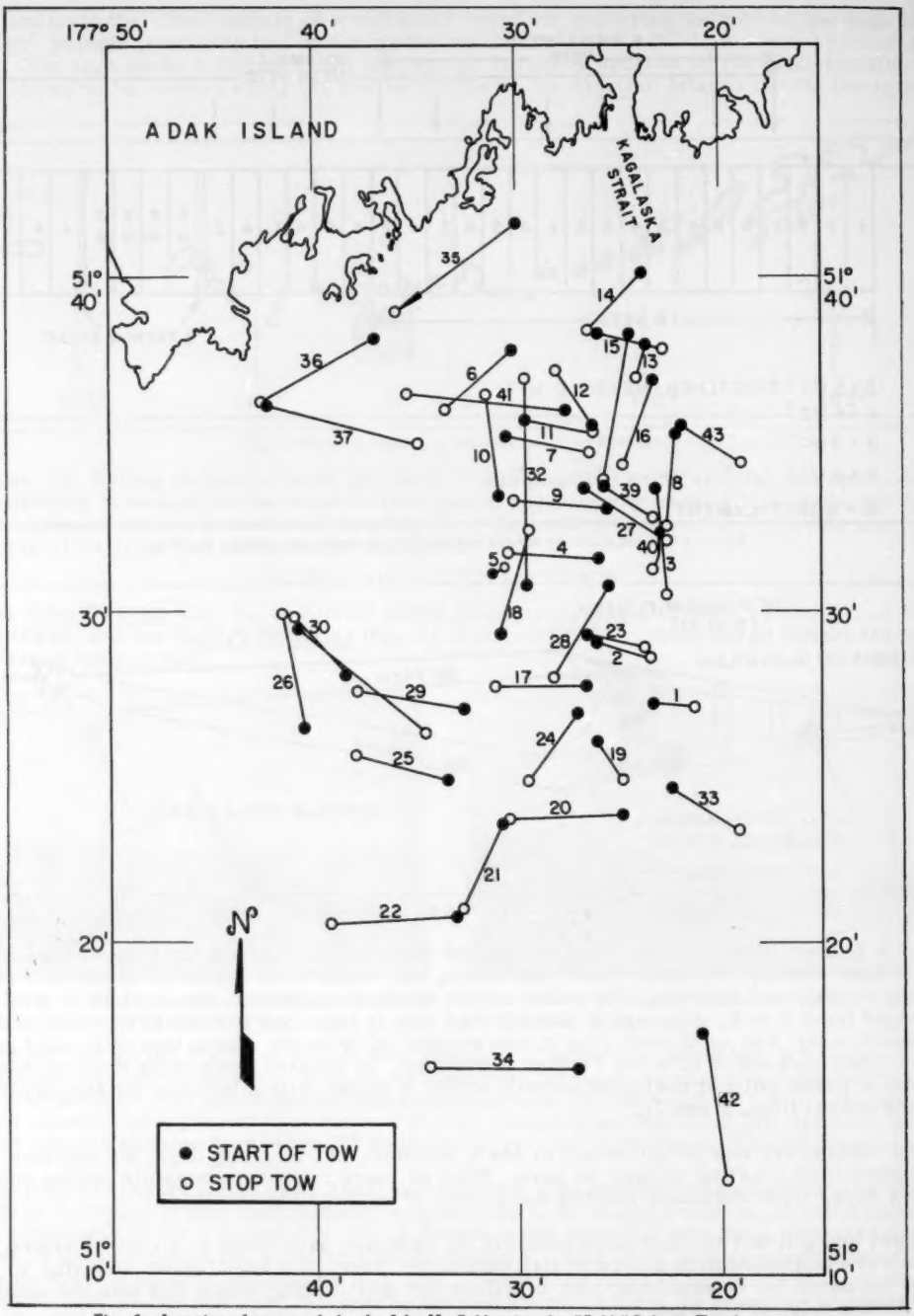

Fig. 6 - Location of tows made by the John N. Cobb using the "Cobb" Pelagic Trawl-Mark II during gill net-trawl study.

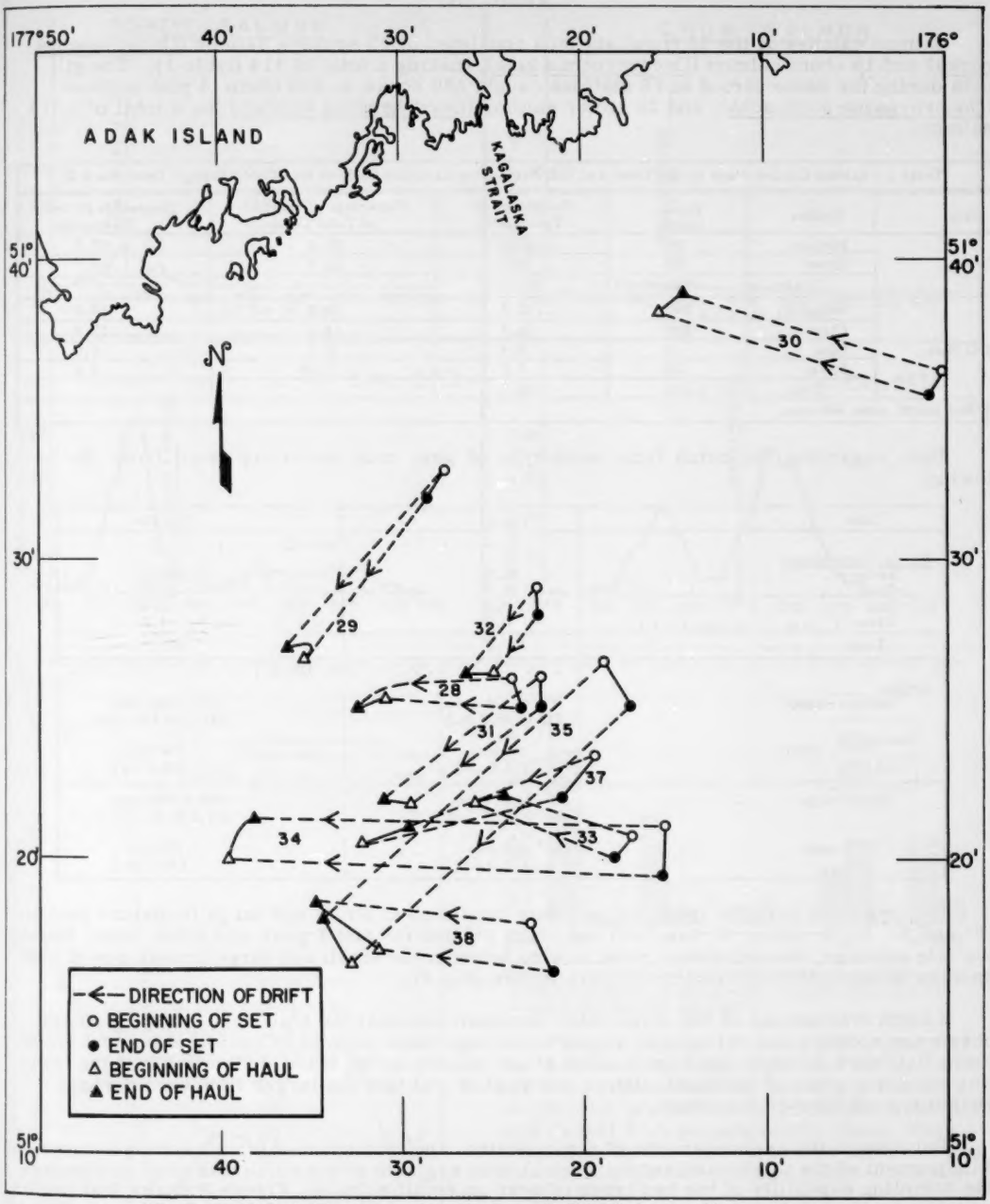

Fig. 7 - Location of gill-net sets made by the George B. Kelez during the gill net-trawl study.

RESULTS

Salmon catches at the 38 trawl stations consisted of 95 sockeye salmon (Oncorhynchus nerka) and 19 chum salmon (Oncorhynchus keta), making a total of 114 (table 1). The gill nets during the same period at 10 stations caught 686 sockeye, 800 chum, 6 pink salmon (Oncorhynchus gorbuscha), and 26 silver salmon (Oncorhynchus kisutch) for a total of 1,518 salmon.

Table 1 - Salmon Catches Made by the Trawl and Gill Nets During Sampling Study of the "Cobb" Pelagic Trawl-Mark II

Gear	Species	Total Catch	Percentage of Total Catch	Percentage of Small[1]/ of Total Catch	Percentage of Small[1]/ by Species
Trawl	Sockeye	95	83.3	82.4	98.9
	Chum	19	16.7	12.3	73.7
	Total	114	100.0		
Gill Nets	Sockeye	686	45.2	33.3	73.6
	Chum	800	52.7	14.5	27.6
	Pink	6	0.4	0.0	0.0
	Silver	26	1.7	0.06	3.8
	Total	1,518	100.0		

1/Fork length under 420 mm.

Data regarding the catch from each type of gear may be compared from the following:

Item	Trawl	Gill Net
	(Percent)	
Species Composition:		
Sockeye	83.3	45.2
Chum	16.7	52.7
Pink	0.0	0.4
Silver	0.0	1.7
Total	100.0	100.0
	(mm. (in.))	
Length:		
Sockeye--range	305 to 426 mm. (12 to 16.8 in.)	292 to 640 mm. (11.5 to 25.2 in.)
" mean	354 mm. (13.9 in.)	404 mm. (15.9 in.)
Chum--range	350 to 513 mm. (13.8 to 20.2 in.)	285 to 638 mm. (11.2 to 25.1 in.)
" mean	406 mm. (16.0 in.)	476 mm. (18.7 in.)

Catches from both the trawl and gill nets consisted of small and large immature sockeye (1- and 2-, 3-, 4-winter-at-sea fish) and chum salmon (2- and 3-year and older fish). During the late summer, the separation point in size between the small and large immatures of both species is about 420 millimeters or 16.5 inches (fig. 8).

Length frequencies of the trawl catch demonstrated that the trawl was catching single ocean-age sockeye and principally single ocean-age chum salmon. Considerable numbers of those fish were gilled in the 3-inch mesh about midway in the trawl, indicating that the trawl was retaining some of the small fish in the meshes and that the larger fish were perhaps swimming out through the mouth.

Because of the preponderance of a single size, age, and species (small sockeye comprised 83.3 percent of the total trawl catch, table 1), this segment of the catch was used to compare the sampling capability of the two types of gear on small salmon. Figure 9 shows that catches taken by the two types of gear indicate about the same trend in abundance of small sockeye salmon in the area fished. Large sockeye were practically absent from the trawl catches, but they were well represented in the gill-net catches (fig. 8).

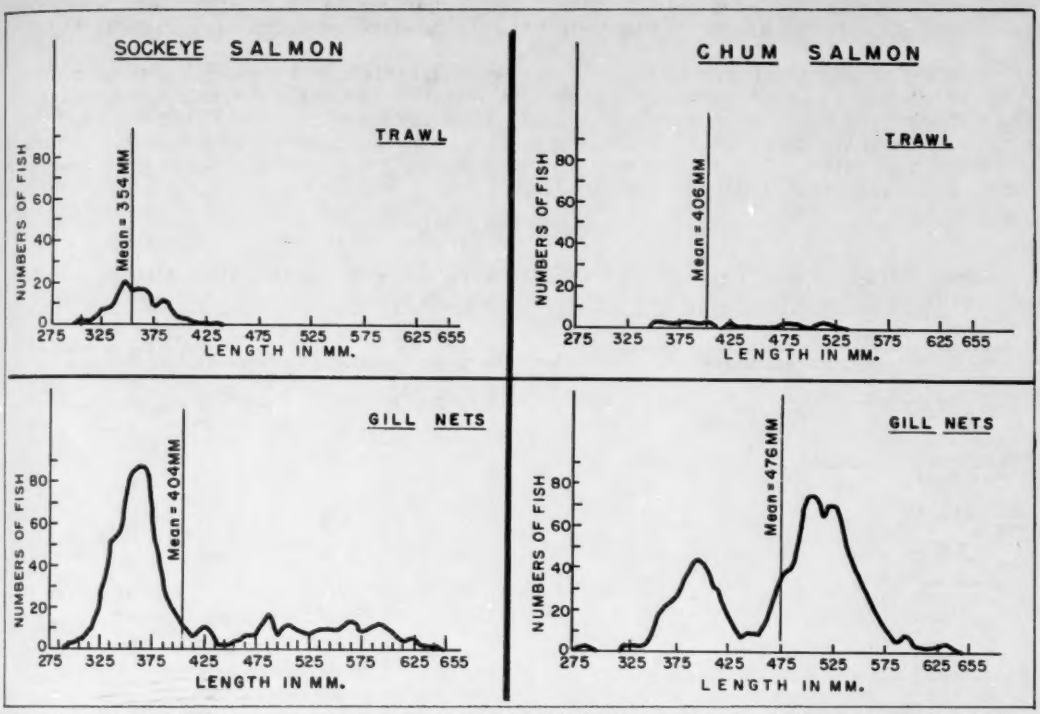

Fig. 8 - Comparison of length frequencies of salmon caught in the "Cobb" Pelagic Trawl-Mark II and gill nets during trawl and gill-net study.

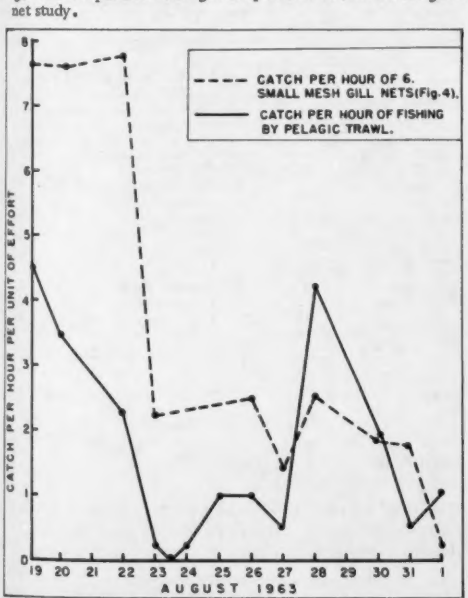
CATCH PER HOUR OF 6. SMALL MESH GILL NETS(Fig.4).
CATCH PER HOUR OF FISHING BY PELAGIC TRAWL.
CATCH PER HOUR PER UNIT OF EFFORT
19 20 21 22 23 24 25 26 27 28 29 30 31 1
AUGUST 1963

Fig. 9 - Comparison of trawl and gill-net catches of small immature sockeye salmon.

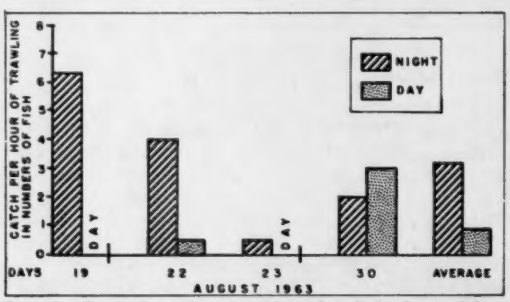

Fig. 10 - Comparison of trawl catches taken during hours of daylight and darkness. (Catches were compared when tows were made during both day and night.)

The percentage of small chum taken by the trawl was much greater than the percentage in the gill-net catches (table 1). The trawl caught 73.7 percent small chum while the gill nets caught 27.6 percent small chum. This difference further indicates that the trawl was more selective for small immature salmon.

Night tows were more productive than day tows during 3 of the 4 days when comparisons were possible. Usually more than three times

as many fish were caught per unit-of-effort at night than during the day (fig. 10). Past experience with gill nets has also shown that night fishing is more productive than day fishing.

Catches of individual tows were not consistently larger from any one direction, but the average catch from each direction did show that certain directions were more productive. The following are the average numbers of fish caught per hour for each direction: east 3.1; north 1.7; south 1.6; and west 1.2. These directions include all tows 45 degrees on either side of the given direction. The catches confirm the westerly movement of salmon in this area reported by Johnson (1963) and Larkins (1963b).

OTHER SPECIES

Many incidental species of marine animals were taken during this study (tables 2 and 3). Catches in the trawl occurred primarily before the fine-mesh liner was removed from the cod end.

Table 2 - Incidental Species of Marine Animals Taken in the Pelagic Trawl During Comparative Fishing Gear Study

Scientific Name	Common Name	Total Numbers	Fork Length 1/	
			Mean	Range
			(mm.)	
Pleurogrammus monopterygius	Atka mackerel	219	125	100-160
Zaprora silenus	Prowfish	21	97	50-200
Cololabis saira	Pacific saury	187	210	185-260
Eleginus gracilis	Saffron cod	3,536	55	35-80
Liparis	Snailfish	1	55	-
Electrona arctica	Bigeye lanternfish	153	6	-
Mallotus villosus	Capelin	413	105	60-135
Anarrhichthys ocellatus	Wolf-eel	1	485	-
Chauliodus macouni	Fanged viperfish	35	No measurements	
Atheresthes stomias	Arrowtooth flounder	1	Do.	
Brama rayi	Pomfret	8	43	37-47
Onychoteuthis banksii	Squid	61	250	150-355
Gonatopsis borealis	Squid	228	70	20-180
Moroteuthis robusta	Squid	4	38	32-43
Gonatus fabricii	Squid	28	10	2-27
Lampetra tridentata	Pacific lamprey	1	38	-
Callorhinus ursinus	Fur seal	1	No measurements	

1/Fork length measurements except for squid species (mantle length) and Pacific lamprey (total length).

RECOMMENDATIONS FOR FUTURE NET MODIFICATIONS

Soon after fishing commenced, it was apparent that trawl catches of salmon were not large enough for research on the distribution and abundance of salmon on the high seas. Gill-net catches indicated that ample numbers of salmon were available in the area. Some modifications to the trawl which may improve its usefulness as a sampling tool are as follows.

Table 3 - Incidental Species of Marine Animals Taken in Gill Nets During the Comparative Fishing Gear Study 1/

Scientific Name	Common Name	Total Numbers
Pleurogrammus monopterygius	Atka mackerel	4
Cololabis saira	Pacific saury	2
Brama rayi	Pomfret	15
Not identified for species	Squid	103
Lampetra tridentata	Pacific lamprey	1
Salmo gairdneri	Steelhead	30
Not identified for species	Herring	4
Lamna ditropis	Salmon shark	1
Anotopterus pharo	Daggertooth	4
Phocoenoides dalli	Dall porpoise	2

1/No lengths were taken of these specimens.

(1) Compress the depth of the opening of the trawl so as to sample a narrow surface layer of water which will reduce the drag of the net and allow an increase in speed.

(2) Reduce the length of the net to reduce drag, and possibly increase speed.

(3) Incorporate an electrical shocking device in the opening of the trawl to insure salmon do not escape. This loss was indicated by the large proportion of small salmon gilled in the meshes of the net and the predominance of small salmon in the total catch.

(4) Incorporate a fyke into the trawl to hinder salmon from swimming out of the net.

(5) Tow the trawl with 2 vessels, one on each side, to allow the trawl to pass through water undisturbed by action of the vessel.

CONCLUSIONS

Salmon catches by the "Cobb" Pelagic Trawl were not of sufficient numbers to be used as samples for research purposes. Catches of small immature sockeye salmon by the trawl and gill nets, however, indicated roughly the same trends in relative abundance. Other segments of the salmon population (large immature sockeye; large immature chum, and small immature chum) were not captured in sufficient numbers by the trawl to compare with gill-net catches.

In almost every case night tows were more productive than day tows. Also, tows made in an easterly direction were more productive than tows made in other directions.

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Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

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ESTIMATING RESIDUAL SHELL IN SHUCKED SOFT-SHELL CLAMS (Mya arenaria L.)[1/]

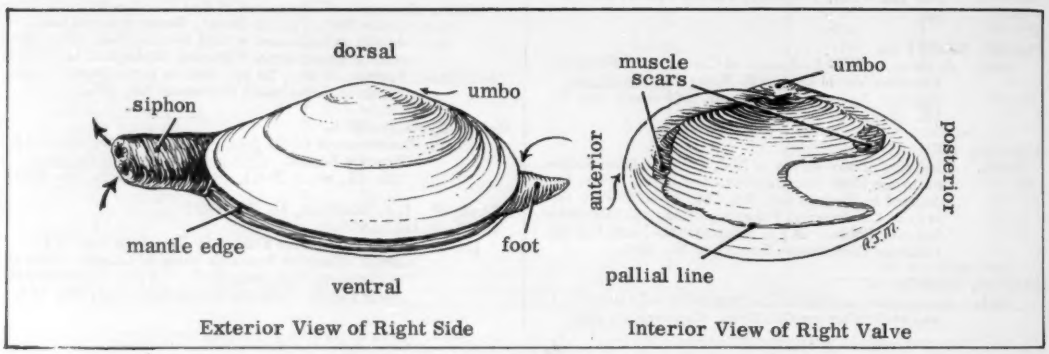
By Baruch Rosen* and Janice Freeman**

ABSTRACT

Residual shell in shucked soft-shell clams was estimated by an improved alkaline digestion method with an average recovery of 98 percent (range 96-102 percent). By using this method, a significant amount of shell can be removed from shucked soft-shell clams by manual sorting.

BACKGROUND

The soft-shell clam (Mya arenaria L.) industry has been increasing in importance to the fishery economy of Maryland the past ten years (Manning and Pfitzenmeyer 1958, Power 1958-1961). Both government and industry have shown interest in promoting higher consumption of soft-shell clams in Maryland and other areas. However, there is still consumer resistance to soft-shell clams. Much of this resistance is due to the presence of grit--i.e., sand and shell.



The soft-shell clam, Mya arenaria L.

Sources and mode of accumulation of sand differ from those of shell; consequently, different processing methods will be required for the removal of each. Before proceeding into the development of such methods, a valid and specific method for estimating the amount present of each fraction is highly desirable.

The following investigation was conducted to (1) find or modify a method (Anon. 1947) applicable for estimating the amount of shell present in shucked soft-shell clams and (2) measure the effect of manual sorting on the total amount of shell present in shucked clams.

For the purpose of this study, shell is defined as broken parts of the calcareous valve (mostly calcium carbonates and phosphates) of the mollusc that will be retained by a 14 x 18 mesh (number of strands per unit in length and width) galvanized iron screen. Because the shell of the soft-shell clam is fragile, the shucked meat is often contaminated with broken pieces of shell material through careless as well as normal handling.

1/Contribution No. 276, Natural Resources Institute, University of Maryland. The work reported in this paper was supported in part by Area Redevelopment Administration Contract No. Cc6027.

*Research Assistant
**Summer Student Trainee
Natural Resources Institute, University of Maryland, Crisfield, Md.

U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sep. No. 727

For the present purpose the shell residue present after shucking can be divided into two distinct groups: "splinters" and "fragments." The splinters are long thin pieces of shell with the long axis parallel to the line of growth. Their width varies from a fraction of a millimeter to 2 millimeters (0.08 inch) while their length ranges from 2 to 20 mm. (0.08-0.79 inch). The splinters result from fracturing the ventral edge of the shell when soft-shell clams are shucked by hand, as is the common practice (Hanks 1963).

Larger irregular masses of shell which vary in area from about 4 $mm.^2$ (0.16 $in.^2$) to more than 400 $mm.^2$ (15.7 $in.^2$) are designated as fragments. These originate from all areas of the shell including the umbo and muscle scars. The fragments result from fracturing the whole shells while in the hands of the shucker and subsequent dropping of shell fragments into the previously shucked clams.

The source of pieces of shell smaller than 4 $mm.^2$ can be best determined by association rather than by shape. Splinters smaller than 4 $mm.^2$ will adhere to the edge of the mantle even after digestion. Loose pieces are probably fragments.

METHODS AND MATERIALS

COLLECTION OF SAMPLE: Shucked soft-shell clams in one pint plug-top cans were obtained from commercial sources in Maryland.

REAGENTS AND APPARATUS: Sodium hydroxide reagent (Solution A) was made by dissolving 375 grams of reagent grade sodium hydroxide pellets in distilled water, cooling, and adjusting to one liter (0.26 gallon).

The phosphate reagent (Solution B) was made by dissolving 87.5 grams of reagent grade sodium orthoposphate dodeca hydrate ($Na_3PO_{4.12}\ H_2O$) in distilled water and adjusting to one liter.

Screens were fabricated from 4 x 4-inch squares of 14 x 18 mesh galvanized iron screen. The edges of the squares were soldered and then turned up to form a shallow dish.

One liter pyrex Erlenmeyer flasks covered with 250 ml. pyrex beakers were used as digestion flasks.

Other equipment included: autoclave, forced draft oven adjustable to $\pm 5^{\circ}$ C. and 2 pairs of fine straight $4\frac{1}{2}$-inch long forceps.

ANALYTICAL PROCEDURE: Clams from 8 pint cans (about 450 g. each) were combined and mixed; 200-gram portions of clams were weighed directly from the mixing container into each digestion flask; 160 ml. of Solution A, and 40 ml. of Solution B were added to the digestion flask, which was then covered and autoclaved at 121° C. (15 p.s.i.g.) for 15 minutes. The flasks were kept hot in the autoclave and were removed one at a time for immediate analysis. The solution (hot corrosive gloves should be used) was poured onto a screen and washed with a mild stream of tap water. Any shell material that may have adhered to the flask was washed down. The shells were separated from other undigested material that remained on the screen and were placed on a second screen with forceps. The shells were then washed thoroughly with distilled water. The screen containing the washed shells was put in a preheated forced draft oven and dried for a half hour at 95° C., cooled, and weighed. The shells were removed and the screen was tared. The actual weight of the shells was determined by the difference (table 1).

Table 1 - Amount of Shell Present in Shucked Soft-Shell Clams as Found by Alkaline Digestion

Sample No.	Weight of Clams		Weight of Shell
	Pints	Grams	Grams
6-18	4	1800[1/]	1.89
6-24	4	1800	1.00
6-25	4	1800	1.05
7-1	4	1800	0.87
7-2	4	1800	0.98
7-8	4	1800	1.23
7-8a	4	1800	1.20
7-10	4	1800	3.18
7-10a	4	1800	2.95
7-15	4	1800	1.00
7-15a	4	1800	1.08
Average			1.49
Range			0.87-3.18

1/Each sample is the combined result of nine 200-g. lots. See procedure.

RECOVERY AND CONTROL EXPERIMENTS: A recovery experiment was conducted in order to find the effect of the digestion mixture alone on the recovery of the shell material. The analytical procedure previously described was followed except distilled water (200 ml.) was substituted for the clams. A known amount of shell material was added to the digestion flask before digestion (table 2).

Table 2 - Recovery of Added Shell From Water Solution

Weight of Shell Added	Weight of Shell Recovered	Percentage of Shell Recovered
Grams	Grams	%
0.75	0.74	98.6
0.75	0.75	100.0
0.75	0.74	98.6
0.75	0.74	98.6
0.75	0.75	100.0
0.75	0.75	100.0
0.50	0.49	98.0
1.0	0.97	97.0
1.5	1.49	99.3
2.0	1.98	99.0
3.0	2.98	99.3
0.75	0.74	98.6
0.75	0.74	98.6
0.75	0.74	98.6
0.75	0.76	101.3
0.75	0.75	100.0
0.75	0.74	98.6
0.75	0.73	97.3
0.75	0.75	100.0
0.75	0.73	97.3
0.75	0.75	100.0
0.75	0.74	98.6
0.75	0.72	96.0
0.75	0.74	98.6
0.75	0.74	98.6
Average		98.8
Range		96-101.3

Table 3 - Recovery of Added Shell From Preinspected Clams

Weight of Shell Added	Weight of Shell Found by Process	Percentage of Shell Recovery
Grams	Grams	%
0.5	0.53	106.0
1.0	1.01	101.0
1.5	1.49	99.3
0.5	0.51	102.0
1.0	1.01	101.0
1.5	1.50	100.0
0.5	0.53	106.0
0.0	0.03	-
0.0	0.07	-
Average		102.2
Range		99.3-106.0

Table 4 - Effect of Visual-Manual Inspection of Total Shell Present in Shucked Soft-Shell Clams

Weight of Total Shell	Shell Found by Hand		Shell Found by Alkaline Digestion	
	Weight	Percentage	Weight	Percentage
Gram	Gram	%	Gram	%
0.23	0.21	91.3	0.02	8.7
0.28	0.27	96.4	0.01	3.6
0.22	0.18	81.8	0.04	18.2
0.20	0.18	90.0	0.02	10.0
0.37	0.33	89.2	0.04	10.8
0.15	0.07	46.7	0.08	53.3
0.11	0.06	54.5	0.05	45.5
0.20	0.17	85.0	0.03	15.0
0.34	0.27	79.4	0.07	20.6
0.28	0.24	85.7	0.04	14.3
0.94	0.88	93.6	0.06	6.4
0.88	0.70	79.5	0.18	20.5
0.29	0.17	58.6	0.12	41.4
0.53	0.46	86.8	0.07	13.2
0.40	0.35	87.5	0.05	12.5
0.94	0.79	84.0	0.15	16.0
0.91	0.80	87.9	0.11	12.1
	Average	81.1	Average	18.9
	Range	46.7-96.4	Range	3.6-53.3

Another experiment was then conducted to find the combined effect of the clams and the digestion mixture on the recovery of the shell material. The analytical procedure first described was followed. However, before digestion, the clams were inspected several times thoroughly by a number of people, all shell found was removed by hand and with the help of forceps, and a known amount of shell was added to each flask (table 3).

In order to find the relative amount of shell which can be recovered by a thorough, though economically sensible, manual sorting, several lots of clams were obtained from commercial sources. These clams were inspected in the laboratory under conditions typical of better industrial practice, bringing into consideration economics of production as well as quality of product. All shell removed was dried, weighed, and reported as shell found by hand. The analytical procedure first described was followed on the manually inspected clams. The total sum of shell found by hand and by alkaline digestion was assumed for the sake of calculation to be the total amount of shell present in the clams (table 4).

DISCUSSION AND CONCLUSION

Addition of phosphate salt to the digestion mixture gave consistently higher shell recoveries than digestion by sodium hydroxide alone. The digestion by the alkaline solution dissolved most of the clams except for epithelial tissues of the mantle and siphon. However, these did not interfere with the screening procedure or the subsequent picking of the shell. The period specified for digestion (15 min.) was sufficient. A longer period offered no advantage, since all added shell could be recovered after 15 minutes of digestion (table 3).

The choice of the specified type of screen was not arbitrary. It was found that this screen retained practically all shell particles while passing sand freely. This is important in view of the forestated difference between sand and shell. Continued subjection of the galvanized iron screens to the hot alkaline solution may cause a change in tare weight. (This may be prevented by using a more inert screening material.)

Recovery of added shell from both water and clams was statistically significant (t test). Because of the very small amount of undetected splinters that persisted in the clams even after thorough sorting, recovery in this case was higher than 100 percent (table 3). It was found that by careful, yet commercially feasible manual sorting, a significant amount of shell can be removed (t test); however, in each case an amount of residual splinters remained (table 4).

The alkaline digestion method described provides a fast and accurate way for estimating the total amount of residual shell in shucked soft-shell clams. Improvement in the methods for detection of shell and the development of commercial methods for elimination of shell in the shucked soft-shell clams are important to the further development and progress of this industry.

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SOUTH ATLANTIC OCEAN SEAMOUNT HOLDS KEY TO NEW STUDIES

Seamount Vema, a submerged volcanic peak rising to within 84 feet of the surface, lies 540 miles northwest of Cape Town in the South Atlantic Ocean. The unique scientific examination of the mount was carried out under the auspices of the National Committee for Oceanographic Research. It is reported that Seamount Vema is unique in that it is probably the only seamount known which rises from the floor of a deep ocean basin to a level sufficiently high for effective sunlight penetration and for study by SCUBA divers with normal equipment.

As an easily-located shoal area where ships may anchor in the center of the Cape basin, it is strategically placed as a reference point from which to carry out a variety of important scientific and fisheries research in an oceanic area of which little is known in spite of its great potential activity.

The rocks on the mount are covered with prolific and varied growth and rock lobsters were seen in great numbers. Those caught by hand and with a net were larger than the most common sizes encountered in the exploited populations of the South African west coast. (South African Digest, December 18, 1964.)

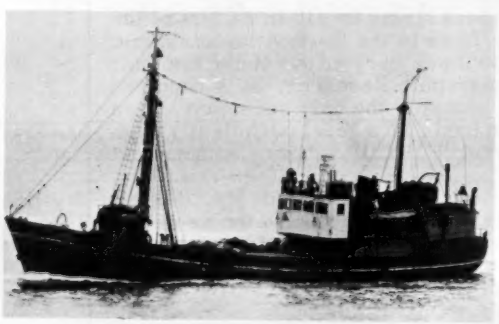
TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITIES OFF ALASKA:

U.S.S.R.: The Soviet trawl fleet in the Gulf of Alaska gradually decreased through October 1964 but began to increase in size again during the latter part of November 1964. In the previous season, the Soviet Gulf of Alaska trawl fishery terminated in mid-October 1963 and did not resume until mid-March 1964. Now the fishery appears to be developing into a year-round operation. Trawling was generally centered about 40 miles off Ocean Cape in the vicinity of Yakutat where about 25 vessels were operating by the end of November 1964. Observations showed the catch to be primarily Pacific ocean perch, with little or no incidental species being taken.

Two Soviet trawlers of a new type were fishing for shrimp during November 1964 in the vicinity of Two Headed Island off Kodiak. That was believed to be the first commercial exploitation of shrimp by the Soviets in the Gulf of Alaska.



One of the smaller Soviet trawlers fishing in the Gulf of Alaska.

Soviet whaling activity had terminated by the first week in November 1964 and all flotillas had returned to their Siberian bases.

Japan: The Japanese shrimp factoryship Chichibu Maru, accompanied by 10 trawlers, was fishing north of the Pribilof Islands in the Bering Sea during November 1964.

A large new stern trawler, the Aso Maru, which fished for Pacific ocean perch in the western Aleutian area during late 1964 was scheduled to return to Japan about January 1, 1965.

Three large new stern tralwers, the Akebono Maru Nos. 71 and 72 and the Taiyo Maru No. 82 (the latter accompanied by the smaller trawler Choyo Maru) were reported to be operating in the eastern Bering Sea during November 1964.

* * * * *

GEAR-MARKING DEVICES TESTED:

Late in 1964, the U. S. Bureau of Commercial Fisheries research vessel John R. Manning participated in tests of gear-marking devices near Cape Spencer, Alaska. Nine different reflector buoys designed to be used in conjunction with shipboard radar were evaluated. Several buoys were lost or badly damaged in the severe tide, wind, and sea conditions encountered off the Cape. The tests eliminated a number of unsuitable designs and definitely established maximum and minumum ranges for two markers considered suitable for use under ocean conditions. Six sets (12) of the 2 satisfactory markers will be placed aboard king crab vessels in the Kodiak area for further testing and evaluation by the industry.

* * * * *

SHRIMP SURVEY OFF SOUTHEASTERN ALASKA:

A private fisheries firm has authorized a commercial fisherman to do about 4 months' exploratory fishing for shrimp with a 25-foot beam trawl early in 1965. The company apparently wants to locate sources of pink shrimp in southeastern Alaska for machine-processing either at Ketchikan or Waterfall.

A pink shrimp fishery would add needed diversification to that area.

* * * * *

HERRING FISHERY, 1964:
About 22,000 short tons of herring were processed in the 1964 southeastern Alaska summer reduction fishery. Age-composition studies revealed that no strong entering year-class was present and that over 70 percent of the herring were age VI or older.

California

DUNGENESS CRAB CATCH FORECAST, 1964/65 SEASON:
Northern California: A good season for commercial dungeness crab fishermen off northern California has been predicted in 1964/65 by the California Department of Fish and Game. Dungeness crab landings totaling 3.7 million pounds were forecast in northern California ports (Fort Bragg, Humboldt Bay, Trinidad, and Crescent City) during the 1964/65 season, as compared with landings of only 810,000 pounds in the previous season.

Dungeness Crab
(Cancer magister)

The number of legal-size crabs caught in random sampling in areas between false Cape and Crescent City led to the prediction for the 1964/65 season in northern California which opened December 15, 1964. The number of sublegal-size crabs caught (crabs between 6 and 7 inches in breadth) also was good, indicating that the 1965/66 crab fishery off northern California should be comparable to the current season.

Central California: Preseason sampling off central California led to a landings forecast of 750,000 pounds of dungeness crabs for the San Francisco Bay and Bodega Bay area in 1964/65, a substantial decline from the 1.2 million pounds landed in 1963/64. The Bay Area season opened November 10, 1964.

The preseason survey also turned up evidence that the crab fishery in central California probably will not improve in the 1965/66 season. That forecast is based on the small number of sublegal-size crabs caught in the sampling survey.

The preseason surveys were conducted with the California Department of Fish and Game research vessel N. B. Scofield.

Cans--Shipments for Fishery Products

January-October 1964: A total of 2,430,725 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January-October 1964, a decrease of 5.8 percent from the 2,579,412 base boxes used during the same period in 1963.

January-September 1964: The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants during January-September 1964 was down about 6 percent from that used during the same period of 1963. During the first 9 months of 1964 there was a decline in the pack of canned Maine sardines on the East Coast, canned shrimp on the Gulf Coast, and canned mackerel on the West Coast. The decline was partly offset by an increase in the Alaska salmon pack. The California canned tuna pack also showed a small increase in the first 9 months of 1964.

In January-September 1964, shipments to the Pacific or Western Area accounted for about 70 percent ot total shipments; shipments to the Eastern Area accounted for about 26 percent; and shipments to the Southern Area accounted for most of the remain-

U.S. Domestic Shipments of Metal Cans for Fishery Products, Jan.-Sept. 1963 and 1964[1/]
(Base Boxes of Metal Consumed in the Manufacture of Cans for Fishery Products)

Receiving Area	First Quarter		Second Quarter		Third Quarter		Jan.-Sept.	
	1964	1963	1964	1963	1964	1963	1964	1963
East[2/]	187,707	155,814	173,530	215,924	230,280	276,572	591,517	648,310
Southern	24,761	21,010	28,390	38,197	22,449	34,986	75,600	94,193
North Central	492	29	219	5	194	8	905	42
West[3/]	359,947	381,735	574,448	629,376	615,157	594,561	1,549,552	1,605,672
Total	572,907	558,588	776,587	883,502	868,080	906,127	2,217,574	2,348,217

1/Preliminary.
2/Includes Puerto Rico.
3/Includes Alaska and Hawaii.

der. Most of the fish-canning facilities are located in the Pacific Area.

Notes: (1) Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 13,360 square inches, equivalent to 112 sheets 14" x 20" size. Tonnage figures for steel (tinplate) cans are derived by use of the factor 23.5 base boxes per short ton of steel. (In the years 1962 and 1963, tonnage data were based on the factor 21.8 base boxes per short ton of steel.) The use of aluminum cans for packing fishery products is small.

(2) See Commercial Fisheries Review, Jan. 1965 p. 19.

Canned Fishery Products

CANNERS CONVENTION MET IN SAN FRANCISCO, JANUARY 22-27, 1965:

The National Canners Association (NCA) held a Canners Convention in San Francisco, Calif., January 22-27, 1965. The preliminary program of the Convention listed the following events of particular interest to the fishing industry:

NCA-Bureau of Commercial Fisheries Conference (open session).

NCA Technical session #1--Fishery Products Program.

NCA Technical Session #6--Marketing Conference.

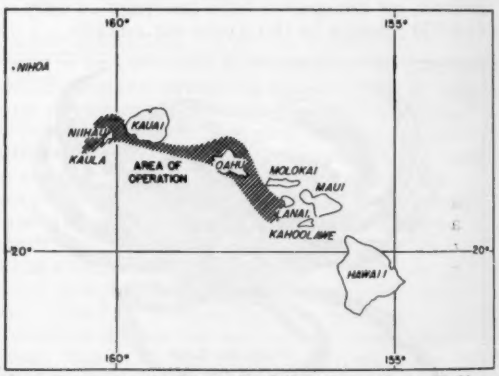
A National Exposition for Food Processors was held at Brooks Hall in the Civic Center. Many other events of general interest to canners were also scheduled.

Central Pacific Fisheries Investigations

SKIPJACK TUNA BIOLOGICAL STUDIES CONTINUED:

M/V "Charles H. Gilbert" Cruise 77 (November 10-15, 1964): To collect biological data on skipjack tuna (aku), which occur in the Hawaiian Islands during the summer and all but disappear during the fall and winter, was the principal objective of this 6-day cruise off the Hawaiian Islands by the research vessel Charles H. Gilbert, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii.

Skipjack tuna populations in the Pacific are divided into a number of reproductively isolated groups called subpopulations. At least two of those groups make up the skipjack catch of the Hawaiian pole-and-line fishing fleet. Those subpopulations can be identified by the blood type of the fish.



Area of operations for Charles H. Gilbert during Cruise 77 (November 10-15, 1964).

During cruise 77, the Charles H. Gilbert took a total of 109 skipjack bloods for population studies from the single school that was successfully fished. The skipjack were taken off the Island of Niihau. Technical difficulties made serum collection impossible.

A total of 87 volume samples of skipjack blood also were collected. The sex of each fish yielding a large volume of blood was determined making a total of 87 skipjack for which blood type and sex can be coordinated.

Twelve snouts and 12 kidney sections of fresh skipjack were collected and preserved for biological study.

The following sightings of bird flocks with fish schools were recorded: skipjack schools 6; unidentified fish 2; bird flock but no signs of fish 3; porpoise 1; and mahimahi 1.

No yellowfin tuna schools were spotted.

Bathythermograph (BT) casts at 270 meters (886 feet) and surface salinity samples were taken every 3 hours when practical and after each successful fishing effort.

Drift cards were released at the time of each BT and at 1-hour intervals along the windward coasts of Oahu and Niihau.

Note: See Commercial Fisheries Review, Jan. 1965 p. 22.

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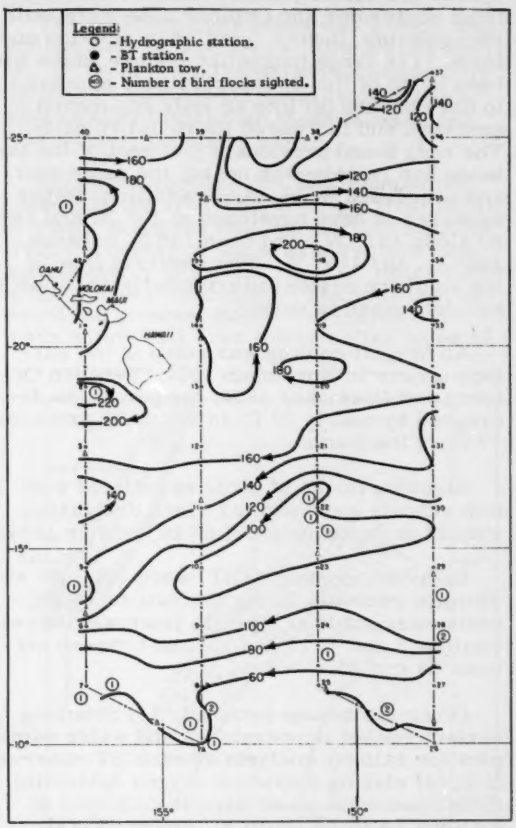
TRADE WIND ZONE
OCEANOGRAPHIC STUDIES CONTINUED:

M/V "Townsend Cromwell" Cruise 10 (November 4-24, 1964): This was the ninth in a series of monthly cruises by the research vessel Townsend Cromwell aimed at finding out more about water layers in the trade wind zone of the North Pacific Ocean. Fishermen as well as biologists benefit from this work by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu, Hawaii.

The skipjack catch by Hawaiian fishermen is affected by seasonal movements of surface water types. Similarly, movements of deeper water mass boundaries may also affect the availability of skipjack to the Hawaiian fishery. Such water movements may also affect the availability of other fishery resources.

The study in the trade wind zone is dealing with three major layers of water in the upper 1,500 meters (4,920 feet): the surface water, the subsurface high salinity layer, and the deeper low salinity layer. In low latitudes those 3 water layers may lie within the upper 300 meters (984 feet) of ocean and may be within the upper 150 meters (492 feet) as in the vicinity of latitude 10° N., and therefore are well within the depths where fish are harvested.

Previous studies have shown that the surface-water-type boundary between the high salinity North Pacific Central water and that of the North Pacific Equatorial water moves seasonally. Data from the present series of cruises confirm the earlier findings. Movements in the boundary of the subsurface high-salinity layer were suspected, but no time-sequence oceanographic data were available to demonstrate such movements. The Townsend Cromwell data now show very pronounced boundary displacements in that layer. Such displacements, although less extensive, are also apparent in the deeper low salinity layer.



Cruise track chart of M/V Townsend Cromwell, Cruise 10 (November 4-24, 1964), showing depth contours of the 20° C. isotherm in meters.

During the November 1964 cruise of the Townsend Cromwell, data were collected in the area bounded by latitudes 10° N. to 27° N. and longitudes 148° W. to 158° W. A total of 43 oceanographic stations were occupied along the cruise track (see chart). At each station temperatures and samples for salinity analysis were obtained at 18 or 20 different depths down to 1,500 meters (4,920 feet).

Deep casts down to 4,000 meters (13,120 feet) to sample 4 other levels were made at stations 7A, 21, 26, 31, and 39. At station 31, an additional sample was taken at 5,000 meters (16,400 feet), but the thermometers were broken by apparent implosion.

The November 1964 surface circulation pattern indicated further change from the summer to the winter pattern. Some features from September and October 1964 were still recognizable, though modified in position and form. The large tonguelike feature which had been north of the Hawaiian Islands appeared to have broken off into an eddy and moved eastward and increased its radial velocity. The eddy found previously just east of the Islands had remained in nearly the same spot and decreased in speed. In addition, eddies appeared to have developed at 19° N. and 16° N. along 157° W., and near 15° N. between 148° W. and 155° W. The westerly flow in the southern region had extended farther north and decreased in velocity.

An overall cooling was noted in the surface waters in November 1964. Between October and November 1964, temperatures decreased by nearly 2° C. in the north and over 1° C. in the south.

Eighteen flocks of birds associated with fish schools were sighted which contrasted with 28 in September and 63 in October 1964.

Bathythermograms (BT) were obtained at 30-mile intervals along the cruise track; casts were made at 10-mile intervals between stations 2 and 4, 17 and 19, and between stations 23 and 25.

Other operations included: (1) obtaining surface bucket temperatures and water samples for salinity analysis at each BT observation; (2) making dissolved oxygen determinations from each water sample collected at stations 7A to 16, 26 to 37, and at 39; (3) taking water samples for dissolved inorganic phosphate analysis; (4) releasing 10 plastic-enclosed drift cards at hourly intervals the first 12 hours and the last 9 hours of the cruise and at 30-mile BT observations throughout the rest of the cruise; (5) making daily plankton tows; and (6) taking radiation measurements from the sun and sky.

These monthly oceanographic cruises in the trade wind zone are a pilot study which is scheduled to continue through June 1965 and so provide the necessary data to begin analysis of the nature and significance of the water mass movements.

Note: See Commercial Fisheries Review, Jan. 1965 p. 23.

Clams

PROGRESS REPORT OF 1964 SURF CLAM SURVEY OFF ATLANTIC COAST:

A progress report on a surf or sea clam survey made in 1964 off the Atlantic coast, conducted jointly by the Oyster Institute of North America and the U. S. Bureau of Commercial Fisheries, was issued in the fall of 1964 by the Bureau's Regional Office, Gloucester, Mass. The survey was first started in the summer of 1963 and resumed in 1964, with field work completed on September 24, 1964. The work done during 1964 was to determine the commercial clam dredging potential of an area designated as survey area V. Survey operations during 1963 were conducted in areas designated as Areas I and IV (off New Jersey, Delaware, and Maryland).

The results of the 1964 surf clam survey as contained in the progress report follow:

Area V is off the coast of Maryland and Virginia just south of Area IV. The northwest corner lies about 15 miles southeast of Ocean City, Md., at 39°9' N. latitude and 74°49' W. longitude; the north boundary follows the 1H4-3050 loran line southeasterly from that point, out to the 25-fathom contour. The east boundary follows that contour line south to the 37°10' N. latitude, roughly paralleling the west boundary which follows the 1H5-3080 loran line from the 37°25' to 39°9' N. latitude. The south boundary lies along the 2450-1H4 loran line between the 25 fathom contour line and the 37°10' parallel. The size of the area is about 900 square miles; the water depth varies from about 50 to 150 feet. The composition of the bottom varies from very hard sandy types to soft mud and clay.

Survey Procedure: Operations followed the same procedure as those used in areas I and IV which were surveyed during the summer of 1963. All sampling stations within the area were located by loran bearings and spaced so that each station occurred about one mile apart. A 40-inch jet-dredge

of the type presently used by the industry was used for taking samples at each survey station.

The clam sounder rigged with two hydrophones was again attached directly to the dredge for use in sounding for shells between stations. The dredge was towed between stations with the pump shut down and the sounder on; when reaching a sampling area, water was pumped to the jets, and after the blade had dug in, a 5-minute tow was made. The catch was then taken aboard for analysis.

Survey operations were started in the northwest section of the area and expanded to the south and east, until at the end of field work, about 30 percent of the area had been covered. Sampling stations were therefore located in both deep and shallow water sections of the survey area and samples were taken from a variety of different bottom soil types that were present in the surveyed area. The best catches of surf clams were made in bottom soils of gravel or soft sand, in water depths from 85 feet to 120 feet.

Yields and Sizes: The largest yield of surf clams from any one station was 10 bushels, but only 9 tows were made where no clams were taken. Most of those 9 tows were made in the deeper offshore waters where the black quahog made up the bulk of the catch. The

Catch of Surf Clams and Black Quahogs, with Bearing and Depth Recordings, for Those Stations Where the Yield Was One or More Bushels of Surf Clams Per Tow

Station Number	Loran Bearing		Depth of Water (In Feet)	Bushels	
	1 H 4	1 H 5		Surf Clams	Black Quahogs
2-29	2714	3076	90	3.0	0.0
3-15	2882	3072	90	1.1	0.0
4-24	2774	3068	87	2.3	3 1/
6-14	2894	3060	96	1.2	0.0
6-15	2882	3060	96	1.5	0.0
6-17	2858	3060	102	1.7	0.0
6-22	2798	3060	108	10.0	0.0
7-12	2918	3056	99	1.6	0.0
7-22	2798	3056	84	1.6	0.0
8-16	2870	3052	99	1.4	0.0
8-17	2846	3052	98	2.0	0.0
8-25	2762	3052	90	1.0	0.0
8-36	2630	3052	93	2.3	0.0
9-2	3038	3048	102	1.6	0.0
9-19	2834	3048	102	1.9	1 1/
10-12	2918	3044	102	1.5	1 1/
10-14	2894	3044	114	3.6	5 1/
10-16	2870	3044	105	2.8	7 1/
10-18	2846	3044	105	1.2	1 1/

1/Number of black quahogs per tow.

predominant size group found throughout the areas were those in the $5\frac{3}{4}$- to $6\frac{1}{2}$-inch size range. At some of the stations, however, surf clams in the smaller size groups outnumbered those in the mature classes. Those stations were located in areas close to heavy populations of mature clams. The second predominant size class were those in the $1\frac{1}{2}$ to $2\frac{1}{2}$-inch group; with those clams in between the two ranges occurring in less amounts. Very few clams under 1 inch in length were taken, probably due to the inability of the gear to catch them.

The smallest clam taken was $\frac{3}{8}$-inch long and the largest measured a little over $7\frac{1}{8}$ inches. In the area of greatest population density the mature clams taken would average somewhat smaller in size than those taken in the less densely populated areas.

Relative Densities of Clam Populations: Generally the area where the greatest density of clams occurred was that section running from the center of the area's western side northeasterly to a point about 15 miles south of the northern boundary. The tows that produced the greatest number of clams were made within that area where softer types of

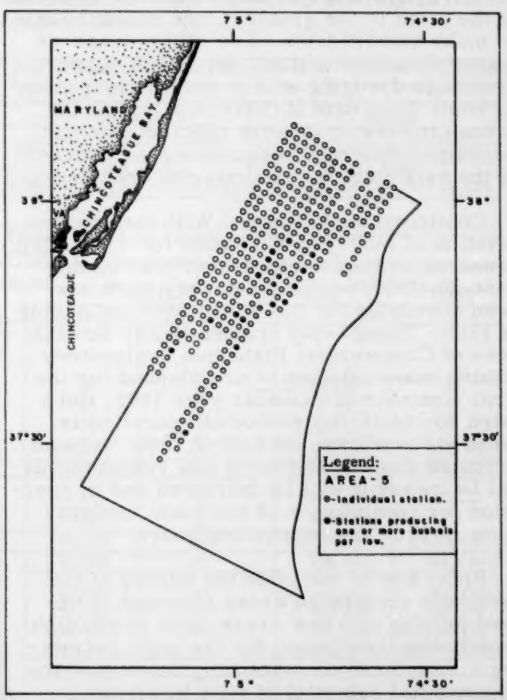


Fig. 1 - Survey Area V showing sampling positions on 1-mile grid pattern. Blacked in stations produced one bushel or more of surf clams in a 5-minute jet-dredge tow.

bottoms were found. North of that the bottom was generally very hard, and south the bottom was very hard with large patches of clay and mud.

Surf clam shells were taken at most of the sampling stations in quantities ranging from 1 or 2 individuals to over 10 bushels.

Very few black quahogs were found along with the surf clams in the best producing clam areas. They did occur in considerable numbers off in the deeper waters where the number of surf clams per tow were few or none at all. The black quahog occurred in those areas in quantities from 3 individuals to a little over 3 bushels. Thus the pattern of distribution appears to be about the same as that found in those areas surveyed in 1963.

The potentiality of that area for future commercial surf clam dredging appears to be the best of any area so far surveyed. There is at present a population of clams of varying density covering almost the entire surveyed area. Within those areas, where the densities of the clam is the greatest, one should be able to make sizable tows. The other areas of lesser densities will not at present support profitable dredging with present fishing gear. At some later date if those populations increase in size or if more efficient gear is developed they could become a good source of the surf clam for commercial dredging.

Continuation of Survey: With the appropriation of money by Congress for a sea clam research project during fiscal year ending June 30, 1965, additional survey work has been scheduled for the late winter and spring of 1965. Two 33-day cruises by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware are planned for the first 6 months of calendar year 1965, and a third 30- to 40-day period of operation is planned for the second half of 1965. It is anticipated that the Bureau's new research vessel Delaware II will be delivered and in operation for continuation of sea clam explorations in 1966 and succeeding years.

Plans are to complete the survey of the presently designated areas I through V before moving into new areas; also production-type fishing is planned for the most promising areas found, to more fully determine the commercial potential of such locations.

Clam Sounder: Gear research for the current and next fiscal year (1965 and 1966) will be concentrated on the fullest development of the clam sounder. Trials and improvements already effected indicate that the device can quite possibly be developed into a sophisticated and accurate research tool. Ultimately it is hoped that this or a similar device can be used to give an objective and dependable index of the abundance of surf clams and/or black quahog (identified by species) available in a given survey area. Such an instrument would greatly facilitate both the speed and accuracy of survey operations. Commercial application would take much of the guesswork and random searching out of the operation.

Fig. 2 - Shows surf clam fishermen sorting clams from shells and other debris taken in jet-dredge catch aboard a commercial fishing vessel.

Future Utilization: Looking toward the future, and supposing that new unexplored beds are located along with better means of harvesting the sea clams, some thought must be given by all concerned to the conservation of that species if the sea clam industry wants to maintain a profitable operation in the coming years. These years of research work should not be aimed towards locating vast beds of sea clams to be utilized by the industry on an unmanaged basis, but rather toward wise commercial utilization that will maintain this clam at a constant high of production.

Note: See Commercial Fisheries Review, November 1964 p. 41; November 1963 p. 28.

Crab

CHESAPEAKE BAY WINTER CATCH MAY BE AFFECTED BY UNUSUALLY WARM WEATHER:

Good weather may mean poor winter crab fishing in Chesapeake Bay, according to the head of shellfish research at the Virginia Institute of Marine Science, Gloucester Point.

The scientist reported large numbers of crabs in Chesapeake Bay in late 1964, even though dredge catches were somewhat erratic. "When water temperatures are above 48° F. one can expect crabs to be feeding and moving about actively," he said. "On the other hand, when the water temperature falls below 46° F, crabs become sluggish, and generally stay put. . . ."

The marine scientist indicated that water temperatures in early December 1964 had not fallen low enough in Chesapeake Bay to halt crab activity. Under the circumstances, crab dredges could make large catches one day, yet upon returning to the same location the following day the watermen might discover that most of the crabs had moved to another location.

Chesapeake water temperatures in the first part of December 1964 were about 4 degrees warmer than the average during the past 6 years. As a result, the crabs which normally stop in the middle of the Bay continued to move farther south. "What we don't know is where the crabs will eventually bed down when cold weather halts their migration," the shellfish expert said. Some may stop in the region from Lynnhaven to Cape Charles. Others may move into ocean waters before the cold reaches them, and there they will become less available to crab fishermen. (Virginia Institute of Marine Science, December 21, 1964.)

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-NOVEMBER 1964:

Fresh and Frozen: Purchases of fresh and frozen fishery products in November 1964 for the use of the Armed Forces were down 12 percent in quantity but only 5 percent in value from the previous month. In November 1964, purchases were down for shrimp, oysters, and most fish fillet items, with the exception of haddock fillets. Prices for shellfish items moved up sharply in November 1964.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, November 1964 with Comparisons

QUANTITY				VALUE			
Nov.		Jan.-Nov.		Nov.		Jan.-Nov.	
1964	1963	1964	1963	1964	1963	1964	1963
(1,000 Lbs.)				($1,000)			
1,970	2,232	24,300	21,722	1,409	1,206	13,712	12,123

Table 2 - Purchases of Principal Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, November 1964 with Comparisons

Product	November				Jan.-Nov.	
	1964		1963		1964	1963
	Quantity	Avg. Cost	Quantity	Avg. Cost	Quantity	
	Pounds	Cents/Pound	Pounds	Cents/Pound	Pounds	
Shrimp:						
Raw headless	96,150	97	1/	1/	1,200,550	1/
Peeled and deveined	240,288	133	1/	1/	1,559,324	1/
Breaded	341,550	88	1/	1/	3,860,770	1/
Molded and breaded	26,300	64	1/	1/	447,620	-
Total shrimp	704,288	104	894,321	69	7,068,264	6,576,065
Scallops	165,200	72	220,975	57	2,587,550	2,384,182
Oysters:						
Eastern	63,340	110	1/	1/	770,881	1/
Pacific	26,396	74	1/	1/	319,078	1/
Total oysters	89,736	100	148,705	89	1,089,959	1,133,930
Clams	12,630	35	35,600	29	235,983	254,742
Fillets:						
Cod	23,400	33	45,731	30	476,616	612,156
Flounder	161,800	31	136,050	27	2,858,452	2,750,977
Haddock	114,760	33	163,560	39	1,766,314	2,012,936
Ocean perch	259,250	29	361,510	31	3,319,970	3,540,351
Haddock portions	131,500	49	-	-	571,322	-
Steaks:						
Halibut	73,950	48	139,047	37	1,206,277	1,333,220
Salmon	21,110	72	13,326	62	249,555	177,076
Swordfish	3,761	58	5,460	52	15,171	31,208

1/Breakdown not available.

Compared with the same month in the previous year, purchases in November 1964 were down 12 percent in quantity, but up 17 percent in value. Average prices were much higher for shrimp and scallops in November 1964. Prices were also up for most of the other items purchased with the exception of ocean perch fillets and haddock fillets.

Total purchases in the first 11 months of 1964 were up 12 percent in quantity and 13 percent in value from those in the same period of the previous year. Purchases of shrimp and scallops showed the largest increase. There was some decline in purchases of oysters, cod fillets, ocean perch fillets, halibut steaks, and swordfish steaks.

Canned: Tuna was the main canned fish item purchased by the Department of Defense in November 1964. In the first 11 months of 1964, total purchases of the 3 principal canned fishery products (tuna, salmon, and sardines)

Table 3 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, November 1964 with Comparisons

Product	QUANTITY				VALUE			
	Nov.		Jan.-Nov.		Nov.		Jan.-Nov.	
	1964	1963	1964	1963	1964	1963	1964	1963
	(1,000 Lbs.)				($1,000)			
Tuna	251	1,011	5,069	4,003	108	416	2,244	1,836
Salmon	1	732	2,750	2,210	1	433	1,631	1,328
Sardine	8	59	301	458	2	22	174	180

were up 22 percent in quantity and 21 percent in value from the same period of 1963 due to larger purchases of canned tuna and salmon.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than shown because data on local purchases are not obtainable.

(2) See Commercial Fisheries Review, Jan. 1965 p. 27.

Great Lakes Fisheries Explorations and Gear Development

LAKE SUPERIOR
TRAWLING STUDIES CONTINUED:

M/V "Kaho" Cruise 23 (November 8-December 12, 1964): Finding improved ways of catching and handling Lake Superior commercial fish was the main aim of this cruise in Lake Superior from Whitefish Bay to the Keweenaw Peninsula. This was the last of three 1964 cruises for that purpose by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Kaho. Bottom trawls were used in the survey.

Highlights of the three cruises were: (1) finding new trawlable grounds; (2) taking consistently good catches of chub at certain depths during each cruise; (3) recording fish schools (probably mostly chub) by depth-sounder in areas not being fished by commercial fishermen; and (4) catching species such as smelt and suckers in some drags.

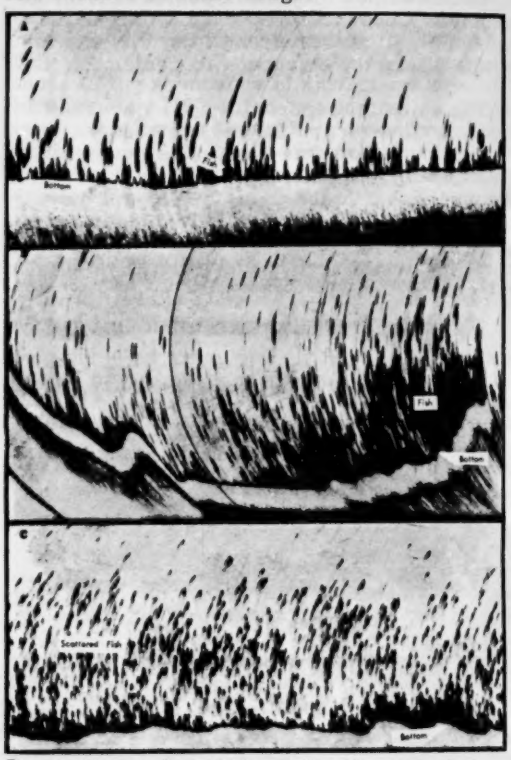


Fig. 1 - Echograms from a high resolution echo-sounder during M/V Kaho cruise 23 showing bottom profile, fish near the bottom, and at midwater depths. A--Echogram made in Whitefish Bay: distance traveled 2 statute miles, depth 35 fathoms, time 9:30 a.m. B--Echogram made off Munising: distance traveled 2.5 statute miles, depth 25-38 fathoms, time 7:40 p.m. C--Echogram made off Keweenaw Bay: distance traveled 2 statute miles, depth 50 fathoms, time 9:00 a.m.

The chub catch rate was good. It would appear practical to trawl for chub even at the relatively low ex-vessel prices offered by the animal-food market. But the chub taken in trawls were of good size and quality so they would bring fishermen much more money on the smoked fish or fillet market.

The primary aim of Kaho cruise 23 was to: (1) determine the seasonal availability of various species of fish to bottom trawls, and (2) locate new areas suitable for trawl-

ing. During cruise 23, the Kaho also: (1) conducted preliminary trials with a midwater trawl and a new high-opening bottom trawl; (2) tested a new type of underwater television system; (3) collected length-frequency data on chub, herring, and alewife; (4) collected water samples for limnological studies; and (5) collected chub samples for studies on improved processing methods.

Fig. 2 - Echogram made with a high resolution echo-sounder during underwater television and light trials. Note that fish move away from lighted area while lamp is turned on and return when lamp is turned off. Depth 42 fathoms. Time 9:00 p.m.

Commercially significant catches of chub were taken in the Whitefish Bay area, Shelter Bay near Munising, off Marquette, east of the Keweenaw Peninsula between Grand Traverse Bay and Bete Gris Bay, and in Keweenaw Bay. Catches of cisco were insignificant throughout all areas fished. Good catches of smelt were taken in Whitefish Bay, Keweenaw Bay, and Shelter Bay. Significant catches of common whitefish were obtained in Munising Bay, Huron Bay, and Keweenaw Bay. Two drags in Huron Bay yielded sizable catches of common suckers.

Additional areas suitable for trawling were located south of Manitou Island, in Keweenaw

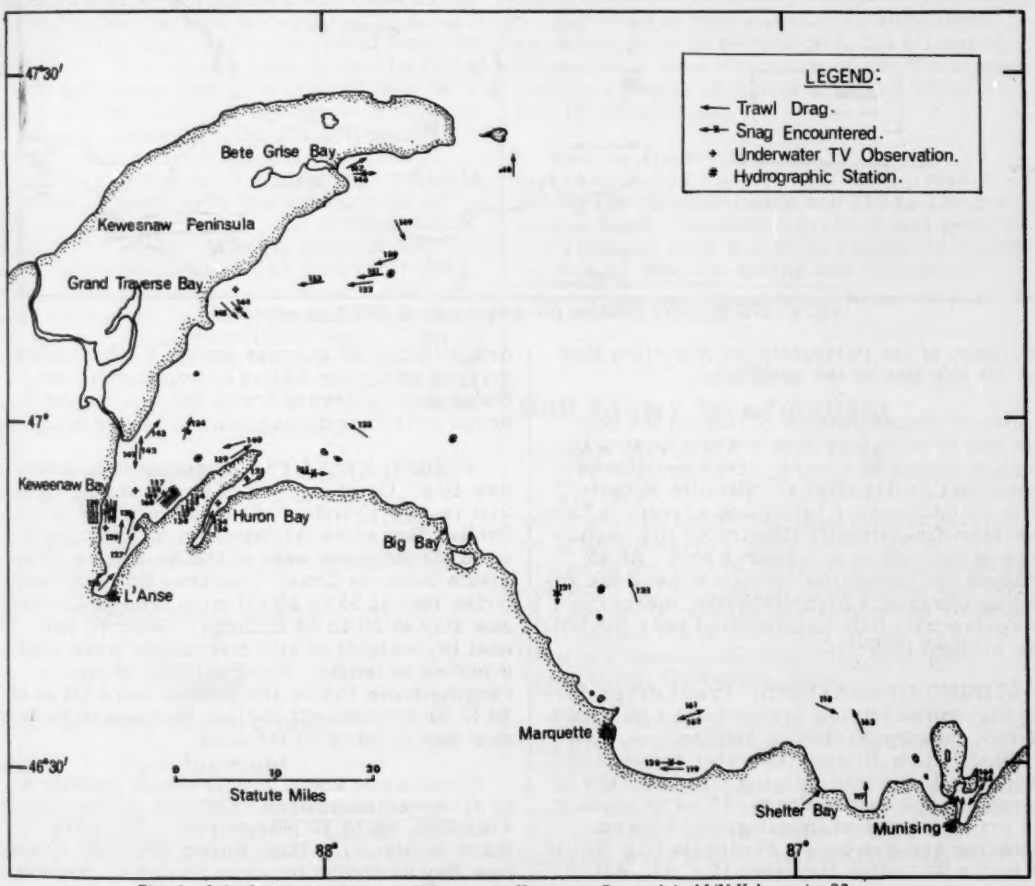


Fig. 3 - Lake Superior explorations (Munising to Keweenaw Peninsula), M/V Kaho cruise 23.

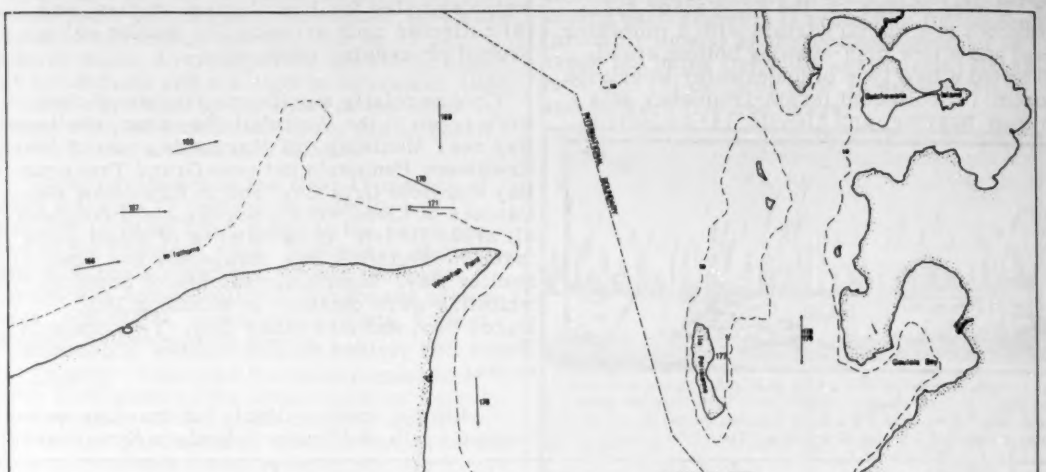


Fig. 4 - Lake Superior explorations (Whitefish Bay Area), M/V Kaho cruise 23.

Bay, east of Ile Parisienne in Whitefish Bay and off Big Bay in the open lake.

Dense concentrations of fish on the bottom and at midwater levels were located by depth sounding in several areas monitored during the cruise (fig. 1). Results of tests with the underwater television system in Lake Superior dramatically illustrated the usefulness of the unit as a research tool. At 45 fathoms the television camera showed the repelling effect of a high-intensity, mercury-vapor lamp on fish concentrated near the bottom at night (fig. 2).

FISHING OPERATIONS: Trawl drags during the cruise totaled 64--including 59 with a 52-foot (headrope) Gulf of Mexico-type fish trawl, 2 with a 40-foot midwater trawl, and 3 with a 70-foot modified wing trawl. Of the 59 standard exploratory drags, 45 were made in the primary area of investigation between Munising and Keweenaw Peninsula (fig. 3) and 14 in the Whitefish Bay area (fig. 4). All drags lasted 30 minutes except 6 which were stopped early due to bad bottom conditions. Snags caused severe trawl damage during 3 drags and minor damage during 6 other drags.

FISHING RESULTS: Munising to Keweenaw Bay: Good catches of chub ranging from 210 to 620 pounds per drag were taken off Shelter Bay at 49-51 fathoms, off Marquette at 45-47 fathoms, east of the Keweenaw Peninsula between Grand Traverse Bay and Bete Grise Bay at 35 to 55 fathoms, and in Keweenaw Bay at 30 to 50 fathoms. Over 75 percent (by weight) of all chub caught were over 9 inches in length. Good catches of smelt, ranging from 100 to 150 pounds were taken at 49 to 51 fathoms off Shelter Bay and in Keweenaw Bay at 30 to 40 fathoms.

Cisco were taken in only small quantities in all areas monitored. Catches of common whitefish, up to 39 pounds per drag, were taken in Munising Bay, Huron Bay, and Keweenaw Bay at depths between 10 and 15 fathoms.

Catches of lake trout, most of which were under 9 inches in length, amounted to slightly over 7 pounds in those drags yielding trout. The largest number of trout taken per drag occurred in Keweenaw Bay at 30 fathoms. All but one trout captured were fin-clipped. Special efforts were made to return trout to the water in good condition throughout the investigation.

Noteworthy catches of other species included 200 and 255 pounds of common suckers at 14 to 10 fathoms, respectively, in Huron Bay. One 7-pound sturgeon was taken in Huron Bay at 14 fathoms. Young herring occurred in most of the drags completed near the Huron Islands, in Huron Bay, and in lower Keweenaw Bay.

Whitefish Bay Area: Echo soundings in the Whitefish Bay area indicated that most of the fish were concentrated in depths of 35 to 45 fathoms. Fishing results confirmed those observations. Nine drags made in depths from 7 to 30 fathoms produced a total of only 38 pounds of fish while 5 drags made in 35 to 45 fathoms yielded a total of 1,870 pounds. The bulk of the latter catches was chub of which one-third were of a large size suitable for smoking. The best individual catch of chub was 770 pounds taken in 35 fathoms north of Whitefish Point. A smelt catch of 200 pounds from 40 fathoms was taken in 1 drag. Smelt catches up to 18 pounds were taken in 4 other drags in depths from 35 to 45 fathoms. The few cisco that were taken were all large fish. Lake trout catches were light throughout the Bay and most of the 51 individuals captured were in the size range of 7 to 9 inches. Catches of other species were insignificant.

HYDROGRAPHIC DATA: Thermal gradients were recorded using a bathythermograph and continuous surface temperature recorder. Surface and bottom temperatures were nearly uniform and both ranged from 32° F. to 46° F.

Note: See Commercial Fisheries Review, Nov. 1964 p. 31

Gulf Fisheries Explorations and Gear Development

SHRIMP GEAR STUDIES CONTINUED:
M/V "George M. Bowers" Cruise 52 (October 21-November 7, 1964): To evaluate new gear designed specifically for electrical shrimp fishing and compare the results with those previously obtained on the Mississippi grounds (Bowers cruise 51--Phase II, September 15-23, 1964) was the objective of this cruise in the Gulf of Mexico by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers.

The gear used on this cruise was identical to that used on the Mississippi grounds where daytime catches with the electrical gear averaged as high as 96 percent of the night catches in the standard gear. The methods used were also identical--the electric net (designated ES-6) was towed from one outrigger and a net of standard design was towed from the other. The average of the night catches in the standard net was considered 100 percent for purposes of comparison.

Bad weather and mechanical difficulties were encountered on this trip, but a total of 33 one-hour tows was made on the Tortugas shrimp grounds in depths of 12-13 fathoms and 17-18 fathoms.

Results showed the electric net yielded 25 to 50 percent of the night standard average during the daylight hours and 110 to 150 percent at night. Continued study of this gear in the Tortugas area was to be conducted by the George M. Bowers during late November.

Note: See Commercial Fisheries Review, January 1965 p. 31.

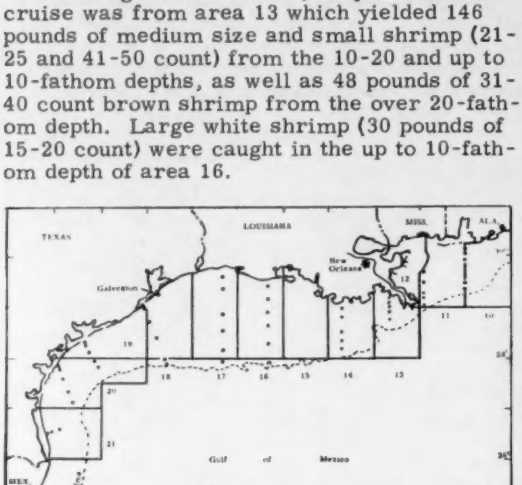
Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:
M/V "Gus III" Cruise GUS-23 (November 10-27, 1964): Very good catches of small white shrimp and better than moderate catches of brown shrimp were made during this cruise in the Gulf of Mexico by the chartered research vessel Gus III. The cruise was one of a series of cruises in a continuing shrimp distribution study conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex.

Eight statistical areas were covered on this cruise and although bad weather hampered operations in western areas of the Gulf, a total of 40 tows with a 45-foot flat trawl was made. In addition, 50 plankton tows, 48 bathythermograph, and 167 water (Nansen bottle) samples were taken. An experimental shell

dredge was used for the first time with excellent results during this cruise.

The largest total catch (194 pounds) of the cruise was from area 13 which yielded 146 pounds of medium size and small shrimp (21-25 and 41-50 count) from the 10-20 and up to 10-fathom depths, as well as 48 pounds of 31-40 count brown shrimp from the over 20-fathom depth. Large white shrimp (30 pounds of 15-20 count) were caught in the up to 10-fathom depth of area 16.



Station pattern for shrimp distribution studies by M/V Gus III, Cruise GUS-23.

The best catch from area 14 consisted of 30 pounds of small white shrimp from the up to 10-fathom depth. Catches of brown shrimp in this area were very small--the best from over 20 fathoms which yielded 5 pounds of quite large shrimp (12-15 count).

The over 20-fathom depth in a number of other areas was fairly productive for brown shrimp, with 54 pounds of 21-25 count shrimp from area 21; 46 pounds of 15-20 count from area 20; 39 pounds of 31-40 count from area 16; and 16 pounds of 15-20 count from area 18.

A lion paw scallop, considered rare because not commonly taken, was caught at a 40-fathom station off the Trinity Shoal area.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, January 1965 p. 32.

Gulf of Mexico

FISHERY LANDINGS, 1963:

Fish and shellfish landings during 1963 in the Gulf States (West Coast of Florida, Alabame, Mississippi, Louisiana, and Texas) totaled nearly 1.4 billion pounds valued at a record $98.8 million ex vessel. This was a decrease of 37.9 million pounds (3 percent), but an increase of $4.3 million (5 percent) as compared with 1962.

Fig. 1 - Gulf States catch, 1963.

Greatly reduced landings of menhaden (968 million pounds--down 89 million) and unclassified fish for use as bait, reduction, and animal food (80 million pounds--down 17 million) largely accounted for the lower volume. Partially offsetting this decline, however, was a sharp increase in the production of shrimp and oysters. Oyster landings of 24,139,000 pounds of meats showed a gain of 5,301,000 pounds over 1962, and were only 240,000 pounds short of the record 24,379,000 pounds taken in 1939. Shrimp landings totaled 203 million pounds--61 million pounds or 43 percent greater than the landings in 1962.

Fig. 2 - Value of Gulf States catch, 1963.

The increase in value resulted principally from production of shrimp--although the ex-vessel price was considerably below that in the previous year.

There were 24,483 fishermen engaged in the Gulf fishery in 1963--1,271 more than in 1962. Commercial fishing craft operating in those States during 1963 consisted of 3,369 vessels of 5 net tons and over, 9,992 motor boats, and 626 other boats.

Manufactured fishery products of the Gulf States in 1963 were valued at $174 million--an increase of more than $4 million as compared with 1962.

Industrial Fishery Products

FISH MEAL AND FISH SOLUBLES FIND STRONG DEMAND IN ANIMAL FEED INDUSTRY:

Mixed-feed manufacturers and experiment station scientists concerned with feed were visited in Connecticut, Delaware, New York, and Pennsylvania during late November 1964 by a member of the U. S. Bureau of Commercial Fisheries Technical Advisory Unit, Boston, Mass.

The high esteem in which fish meal is held by producers of poultry and pig feeds was demonstrated by the concern shown by feed manufacturers over future supplies of the product. It may be assumed that the feed producers will not lower the fish meal levels in poultry and pig feeds until compelled to do so by shortages.

Also evident was the high regard that exists for high-quality United States fish meal as compared with imported meal. For example, one feed mill official said that whereas his starter and grower broiler rations both contain fish meal at a level of 5 percent, the former, the more critical ration, contains domestic meal whenever possible.

The experiment station scientists visited were enthusiastic over the use of fish products in mixed feeds. They also showed strong interest in future research on such products. Research scientists at one experiment station announced tentative plans for an investigation of the value of UGF (unidentified growth factor) in egg production. Those workers believe they have evidence that UGF increases egg production significantly when added to a laying ration that contains, with the exception of UGF, every ingredient known to be required by laying hens. If subsequent research confirms that finding, a large new market for fish solubles as a source of UGF may be opened up.

* * * * *

U. S. FISH MEAL, OIL, AND SOLUBLES: Production by Areas, November 1964: Preliminary data on U. S. production of fish meal, oil, and solubles for November 1964 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U.S. Production1/ of Fish Meal, Oil, and Solubles by Areas, November 1964 (Preliminary) with Comparisons

Area	Meal	Oil	Solubles
	Short Tons	1,000 Pounds	Short Tons
November 1964:			
East & Gulf Coasts	6,028	6,362	1,888
West Coast2/	1,996	452	1,022
Total	8,024	6,814	2,910
Jan.-Nov. 1964 Total	201,052	164,715	80,576
Jan.-Nov. 1963 Total	221,056	177,972	87,174

1/Does not include crab meal, shrimp meal, and liver oils.
2/Includes American Samoa and Puerto Rico.

Maine Sardines

CANNED STOCKS, NOVEMBER 1, 1964:

Canners' stocks of Maine sardines on November 1, 1964, were down sharply from those of the same date in 1963 and 1962, but were 408,000 cases above stocks on hand 3 years ago on November 1, 1961 (the pack for the 1961 season was exceptionally small).

Carryover stocks at the canners' level amounted to about 622,000 cases on April 15, 1964, which is the traditional opening date of the Maine sardine packing season. Carryover stocks amounted to 660,000 cases on April 15, 1963, but only 33,000 cases on April 15, 1962, following the short-pack year.

During April 15-November 7, 1964, the Maine sardine pack totaled 840,000 standard cases, according to the Maine Sardine Council. That was much less than the 1,584,000 cases packed during the same period of 1963, but more than the 640,000 cases packed in the same period in 1961 when fishing was extemely poor.

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, November 1, 1964 with Comparisons1/

Type	Unit	1964/65 Season	1963/64 Season					1962/63 Season				
		11/1/64	7/1/64	6/1/64	4/1/64	1/1/64	11/1/63	7/1/63	6/1/63	4/1/63	1/1/63	11/1/62
Distributors	1,000 actual cases	291	234	254	291	261	308	217	215	264	271	230
Canners	1,000 std. cases2/	629	514	499	658	1,063	1,255	643	536	699	1,092	1,348

1/Table represents marketing season from November 1-October 31.
2/100 3¾-oz. cans equal one standard case.
Source: U.S. Bureau of the Census, Canned Food Report, November 1, 1964.

In November 1964, fishing for Maine sardines was spotty, but most Maine sardine plants were still operating with hopes of reaching a total pack of 900,000 cases by the end of the season, December 1, 1974.
Note: See Commercial Fisheries Review, Sept. 1964 p. 27.

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INDUSTRY HOPES TO SELL TO THE PHILIPPINES:

The Republic of the Philippines is one of the world's largest purchasers of sardines and the Maine Sardine Council is seeking to get a substantial amount of this business. At stake is the annual Philippine requirement of canned sardines which is valued at about US$20 million.

Presently the South Africa Republic is the major supplier of canned sardines to the Philippines, but it appears that the Philippine Republic would rather do its shopping elsewhere. However, price is an important factor and the South Africans are low cost producers.

Sardines are a major part of the diet of the 30 million Filipinos who are probably the world's largest consumers of this item on a per capita basis. NAMARCO, the Philippine Government buying agency, purchases virtually all the sardines consumed in the Philippines. (Maine Sardine Council, December 6, 1964.)

Navigation

OFFSHORE LIGHT TOWERS PART OF U. S. COAST GUARD MODERNIZATION PROGRAM:

To meet increasing demands of a rapidly changing world, the Coast Guard has embarked on a program to modernize its establishment ashore, afloat, and in the air. New vessels acquired by the Service during 1964 included the 210-foot medium-endurance cutters Reliance, Diligence, and Vigilant. It is expected that the goal of fleet modernization will be attained by the early 1970's.

Navigational Aids: Near Southport, N. C., the famous old Frying Pan Shoals Lightship was replaced by an offshore light tower. Eventually, permanent light towers will replace many of the Coast Guard lightships.

The new Frying Pan Light Tower is equipped with communications and oceanographic equipment. The new tower was designed by the Coast Guard to withstand the impact of extraordinary wind and wave actions. Its life expectancy is 75 years. A crew of 6 Coast Guardsmen operate the tower, as compared to the 16 to 20-man crew required to operate a lightship.

The 550-ton deckhouse of the Frying Pan Light Tower is 25 feet high and 86 feet square. It is supported on 4 steel legs spread 60 feet apart. The legs are encased in 36-inch diameter steel pilings driven into the ocean floor. The deckhouse provides living quarters, and its roof can serve as a landing platform for the largest of Coast Guard rescue helicopters.

Fig. 1 - New U.S. Coast Guard Frying Pan Shoals Offshore Light Tower, placed in operation on November 24, 1964, replaces the famous old 133-foot lightship which guarded the shoals 28 miles southeast of Cape Fear, N. C., since she was built in 1930. Here, the lightship Frying Pan circles the tower, gives three farewell whistle blasts, and departs for Morehead City, N. C., to prepare for her new assignment at Cape May, N. J., as a relief lightship. The new tower is equipped with a radiobeacon and a 3.5-million candlepower light which from its elevation 175 feet above water is visible to mariners 17 miles seaward.

In 1964, the Coast Guard's more than 42,000 navigation aids helped to guide travelers both on and over the seas. The aids were of all types, including an atomic-powered lighthouse, as well as a series of 66 LORAN (Long Range Aid to Navigation) stations encompassing the globe. In May 1964, the world's first atom-powered lighthouse was placed in operation in Chesapeake Bay by the U. S. Coast Guard. It is anticipated that automatic facilities will

eventually supplant many of the manned light stations now in use.

Fig. 2 - An oceanographic student aboard the icebreaker Northwind prepares to lower a gravity meter to the bottom of the Chukchi Sea. Data collected will be used by scientists to measure the thickness and composition of the earth's crust beneath the Arctic basin. The Northwind was used in the U.S. Coast Guard's July to November 1964 Alaskan Patrol. Oceanographic investigations were made in the Beaufort, Chukchi, and East Siberian Seas. The Northwind also conducted measurements of the earth's gravitational field in the vicinity of Wrangell Island off the northeast coast of Siberia, and in the Aleutian Islands before returning to her homeport at Seattle, Wash.

Oceanography: In 1964, the Coast Guard broadened its participation in the national oceanographic effort by equipping half of its major cutters with modern oceanographic instruments. They will conduct long-term, comprehensive surveys of ocean phenomena. In April 1964, the Coast Guard established an Oceanographic Unit which will join with other Federal agencies in an intensive effort to unlock the secrets of the ocean.

Through oceanic studies carried out by its International Ice Partol, Alaska Patrol, and ocean station vessels in the Atlantic and Pacific, the Coast Guard recorded new gains in its long established marine research program. It has been conducting marine studies since 1867 when the cutter Lincoln was dispatched to explore the waters off the recently purchased Alaskan Territory. (U. S. Coast Guard, January 4, 1965.)

New England Fisheries

GROUNDFISH AND SCALLOP LANDINGS IN 1964 AND FORECAST FOR 1965:

The abundance of groundfish on New England fishing banks is expected to hold steady during 1965, but the abundance of sea scallops will decline, according to the North Atlantic Regional Director of the U. S. Bureau of Commercial Fisheries. That forecast is based on information provided by biologists of the Bureau's Woods Hole Biological Laboratory who check the landings of commercial fishermen and sample fish and shellfish on offshore fishing banks with the research vessel Albatross IV.

Fig. 1 - Unloading haddock at Boston Fish Pier.

Haddock landings in New England in 1964 were approximately 115 million pounds, an increase from the 109 million pounds landed in 1963. The abundance of scrod haddock on New England banks is expected to increase in 1965. The increased abundance will be the result of the large year-class (spawned in 1963) that will enter the fishery as small scrod in the spring of 1965. Albatross IV surveys during the past 2 years indicate that the incoming year-class for 1965 is one of the largest ever found in surveys of the area. However, the following year-class spawned in (1964) appears to be a relatively small one.

Normally a haddock year-class as large as that spawned in 1963 would support the fishery for 2 years, but the situation for 1966 is made uncertain by the increased take of haddock by foreign vessels. What effect this increased foreign catch of haddock will have on United States landings in 1966 cannot be forecast at present.

New England landings of cod in 1964 were about 32 million pounds, compared with 36 million pounds in 1963. Abundance is expected to remain at prevailing levels during 1965.

Landings of ocean perch in New England in 1964 were down to 88 million pounds from the 108 million pound total in 1963. Abundance is expected to remain at present levels, and landings in 1965 will depend on intensity of fishing.

The yellowtail flounder fishery has been enjoying a series of good years due to increased abundance which is expected to remain high in 1965. Landings in 1964 were 77 million pounds compared with 78 million pounds in 1963; landings in 1965 are expected to be equally as good.

Fig. 2 - At Gloucester, Mass., basket of whiting is being swung from the vessel to the conveyor belt hopper on the wharf.

New England landings of whiting (silver hake) in 1964 were about the same as in 1963 (86 million pounds) in spite of intensive whiting fishing on Georges Bank by the U.S.S.R. The effect of the foreign fishing does not yet show on the index of abundance of the whiting stocks fished by the United States fleet. Consequently, there is no reason to believe at this time that whiting availability to the United States fleet will be any less in 1965.

Sea scallops have suffered a decline in abundance during the past 3 years, and Canadian fishing has increased. New England scallop landings declined from 18 million pounds in 1963 to 14 million pounds in 1964, while the 1964 Canadian catch was about the same as the 16 million pounds landed in 1963. Recent surveys by Albatross IV showed a continuing decrease in abundance so the total Canadian-United States scallop landings are expected to decrease in 1965. The share taken by the United States will depend upon the intensity of U. S. fishing.

Note: See Commercial Fisheries Review, Feb. 1964 p. 36.

North Atlantic

FOREIGN FISHING ACTIVITIES OFF COAST, NOVEMBER-DECEMBER 1964:

In order to observe foreign fishing activities in the North Atlantic, the staff of the Fisheries Resource Management Office, U. S. Bureau of Commercial Fisheries, Gloucester, Mass., has been conducting weekly reconnaissance flights cooperatively with the U. S. Coast Guard.

Although there appeared to be only limited Soviet fishing activity during the early part of December 1964, a total of 20 Soviet fishing vessels had been sighted by the end of the month. During the previous month, 26 vessels of similar types were seen. In December 1963 a total of 17 Soviet factory stern trawlers and one refrigerated fish transport was reported.

The Soviet fleet seen this past December was widely scattered over Georges and Browns Banks but gradually shifted its operations southward between Hudson and Black Canyons, 80 miles south of Black Island, R. I., on the western border of the International Commission for Northwest Atlantic Fisheries (ICNAF) convention area.

Shows type of Soviet vessels operating on Georges Bank during October 1964--factory stern trawler (Tropik class) alongisde fish transport vessel.

The factory stern trawlers observed during December were fishing in 80 to 100 fathoms and were taking whiting and undetermined quantities of scup (porgy). Their dehydration plants were operating to such an extent that one U. S. fishing vessel some 20 miles away

sent a message to the Coast Guard that a ship was on fire.

This could possibly be an eventual fleet movement to the mid-Atlantic coast area as was the case during the previous winter.

During November 1964, there was a continued decline in Soviet fishing activity on Georges Bank and vicinity. A total of 26 Soviet fishing vessels (identified as 23 factory stern trawlers and 3 transport ships) was observed during November as compared with 47 in October. Their operations were more than double those observed in November 1963.

With the number of Soviet vessels in the Georges Bank area fluctuating from week to week, it was suspected that the Soviets as of the end of November, were alternating their operations between Georges Bank and eastern Nova Scotia areas. That fleet, according to size, was then generally spread out over the banks from the Cultivator Shoals to the Northern Edge of Georges Bank.

During November there was a noticeable drop in the Soviet vessels' catches of herring. This was noted by little or no fish left in the open storage areas on deck as evident when the Soviets were fishing intensively.

Note: See Commercial Fisheries Review, December 1964 p. 50.

North Atlantic Fisheries Explorations and Gear Development

TUNA AND SWORDFISH DISTRIBUTION STUDIES IN WESTERN NORTH ATLANTIC CONTINUED:

M/V "Delaware" Cruise 64-10 (October 15-November 5, 1964): Tuna and swordfish explorations in the western North Atlantic Ocean were continued by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware during this three-week cruise east of New England and south of Nova Scotia. Objectives of the cruise were to: (1) continue a systematic survey of the distribution and abundance of tuna in the Northwest Atlantic; (2) investigate the availability of swordfish beyond areas of the present fishery; (3) evaluate application of synoptic oceanographic information received from the U. S. Naval Oceanographic Office by radio facsimile; and (4) evaluate a powered reel method for handling long-line gear.

Fishing Sets and Results: Sets of long-line gear were made during daylight hours at 8 stations with a total of 3,545 hooks fished. Gear arrangement consisted of a mainline buoyed from the surface at a 10-fathoms depth with eleven 20-fathom sections and 10 branchlines between buoys.

Fig. 1 - Set-out of long-line gear from powered reel during Delaware cruise 64-10. Note A-K type snap (with branchline) being applied to 20-fathom mainline section.

Albacore tuna (Thunnus alalunga) were found at 5 stations with catch rates of 1 to 2 fish per 100 hooks, which approximates those noted on a previous Delaware cruise in this area (Cruise 63-11, November 13-December 10, 1963). Average weight of 27 fish caught

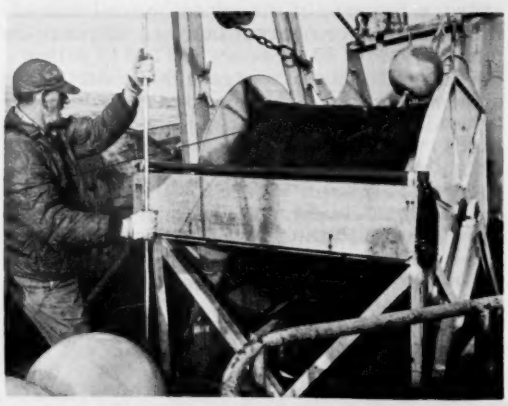

Fig. 2 - Powered long-line reel hauled long-line gear during Delaware cruise 64-10. Hydraulic motor and reducer are at lower left corner of frame. Manual level-winding was required after breakdown of mechanical level-wind device.

was 36.2 pounds; weight range was 26 to 62 pounds. Analysis of the catch position on the gear shows that the lower hooks (middle of mainline curve between buoys) took albacore

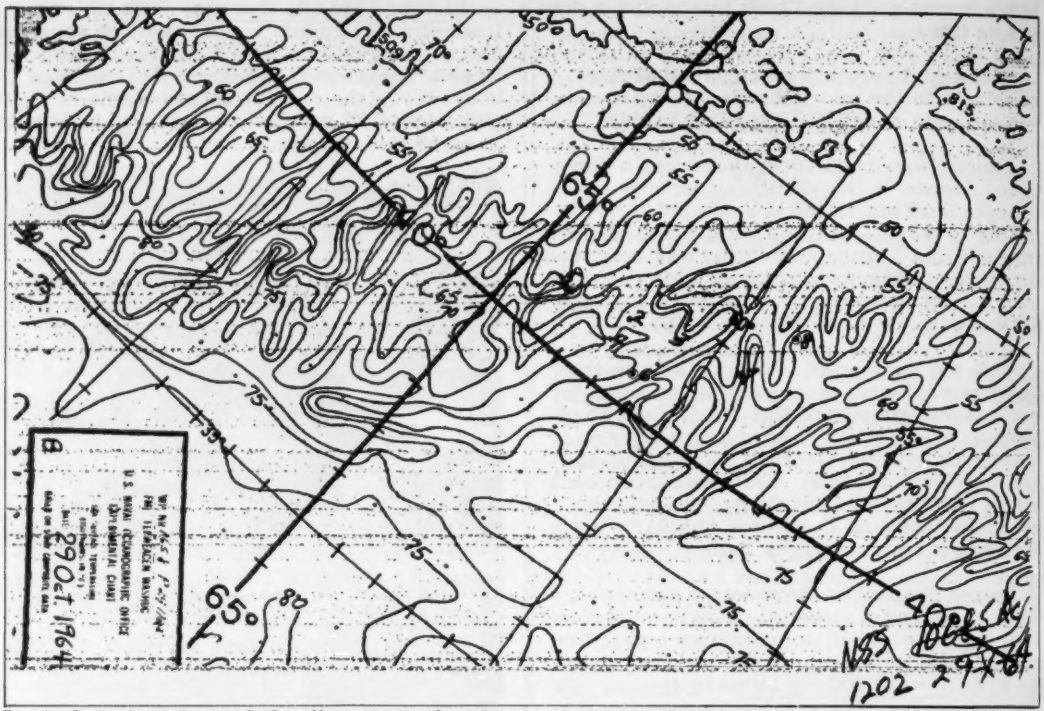

Fig. 3 - Radio-facsimile chart B (Cape Hatteras to the Grand Banks) received on the M/V Delaware during cruise 64-10. Sea surface temperature isotherms are based on 5-day composite data. Long-line fishing stations are numbered 1-8; station 6, 7 and 8 were fished on the basis of this chart. The actual chart measures 19 by 12 inches.

at twice the rate of the upper hooks (ends of main-line curve nearest buoys). Stomach content analysis of 20 albacore and 2 of 11 yellowfin tuna (Thunnus albacares) taken during the cruise indicated that the albacore were feeding well below the surface, while the yellowfin had been feeding at the surface. Average weight of the 2 yellowfin examined was 104 pounds. A total of 20 big-eyed tuna (Thunnus obesus) was caught at 6 stations; 6 of those were examined and averaged 95 pounds.

Due to severe weather and sea conditions during the second half of the cruise, no night long-line sets could be made and no swordfish data were obtained.

In cooperation with participating agencies, a total of 30 tuna, 2 white marlin, and 7 shark were tagged and released with dart tags. Tuna blood samples were collected for serological analysis by the Subpopulations Program at the Bureau's Biological Laboratory in Honolulu. Other data collected and examined included lengths, weights, stomach contents, and sexual condition of all fish taken aboard the vessel. Other long-line catches of particular scientific note were 8 pelagic stingrays (Dasyatis violacea), and one deep-sea pomfret (Taractes princeps). A 105-pound white marlin (Tetrapturus albidus) taken 260 miles south-southwest of Halifax, Nova Scotia, contained a Z-nickel sportfisherman's hook embedded in its stomach wall, suggesting a movement of this fish to the east from inshore sportfishing areas west of Cape Cod.

Additional Thermal Data Utilized: During long-line cruises made by the vessel Delaware over the last two years, exact station positions have been determined on the basis of environmental data gathered and evaluated at sea. Bathythermograph (BT) transects and sea-surface thermograph recordings provided much of the information, but have not given synoptic coverage needed to determine most likely fishing areas (current boundaries, thermal gradients, upwellings, eddies, etc.).

Sea-surface temperature isotherm charts with 5° F. increments for the western North Atlantic, from Florida to Newfoundland, have been available for several years from the U. S. Naval Oceanographic Office's radio facsimile broadcasting system at Washington, D. C. Two overlapping 5-day composite charts are transmitted daily; charts are revised twice each week to provide a continuous synopsis of the sea-surface thermal environment.

Radio-facsimile recording equipment installed on the Delaware for this cruise received these charts which were used in determining areas for long-line sets the following day. Continuous thermograph records and bathythermograph casts were made to check the validity of the charts, and to aid in slight navigational adjustments in locating precise thermal conditions for setting. With few exceptions the information from those charts proved accurate to within 10 miles of the positions selected the previous day. Further application and analysis of the charts for locating likely fishing areas is anticipated in future pelagic explorations.

Additional charts received with this equipment included analyses and prognostics for weather, sea, and wave conditions. With experience in interpretation it is expected that this information will directly aid in safer and more economical operation of the vessel in the open ocean area.

Modified Long-Line Gear Trials: Since 1957, long-line explorations of the vessel Delaware have used galvanized tubs ("baskets") and a Japanese long-line hauler to handle gear. For this cruise a hydraulically-powered reel was designed, constructed, and installed to: (1) increase the speed of setting and hauling the gear; (2) increase the safety of long-line operations; and (3) at the same time reduce the number of men required to operate the fishing equipment.

The reel was made of steel, 60 inches in diameter, with a 24-inch diameter core 50 inches in length. The reel frame had a base dimension of 68 x 61½ inches, and a height of 36 inches. Hydraulic power was provided by a 30 horsepower, 45 gallon-per-minute pump system with 1-inch hoses. An automatic level-wind was fitted on the frame and driven by a chain assembly from the reel's shaft. Capacity of the designed reel was 20 miles of ¼-inch line with looped and knotted sections of 20 fathoms. Speed and power control consisted of a by-pass lever positioned at the starboard rail fairlead. Three fairleads guided the line during hauling from the rail to the level-wind. In setting the gear (port-side--leeward), one fairlead was positioned on the ship's rail, and the line was backed off under power to obtain correct slack in the mainline. Two tables were set at the port rail to hold tubs of baited branchlines (30 branchlines per tub). The branchlines and buoylines were fitted with halibut-type A-K tuna snaps which were applied to the 20-fathom mainline sections between the knots. Two pairs of men alternated in setting branchlines, one man of each pair placing the snap while the other threw the branchline. Gear was hauled on the starboard side (windward); branchlines were cleared from the mainline and recoiled in the tubs ready for the next set.

Several immediate modifications to the system were indicated during the cruise: (1) the reel and frame should be redesigned for greater strength, the core with a larger diameter and greater length; (2) the level-wind needs redesigning; (3) an auxiliary control should be placed at the reel; (4) an improved branchline tub is required to prevent snarls during set out; (5) a chute parallel to the rail to receive baited hooks would increase safety and reduce the number of men setting branchlines from 4 to 2; and (6) a mainline guide chute after the setting area at the rail would control the angle of mainline on setout to facilitate placing the branchline snaps.

Preliminary results from first trials of the new gear-handling system were encouraging. Both setting and hauling times have been appreciably shortened and further increases in speed are anticipated after modifications. Hooks are now separate from the mainline when the gear is aboard ship, and setting is readily accomplished from the protected (leeward) side of the vessel--both major safety factors. Although the number (6) of men needed on deck was not changed for those early trials, with changes in the system, the number should be decreased by two men.

Note: See Commercial Fisheries Review, September 1964 p. 28.

North Atlantic Fisheries Investigations

SEA HERRING
POPULATION SURVEY CONTINUED:

M/V "Delaware" Cruise 64-9 (October 1-8, 1964): The purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware was to: (1) sample populations of adult sea herring and to obtain related environmental data; (2) obtain sea herring blood samples; (3) make plankton tows for fall-spawned herring larvae; and (4) obtain blood samples and measurements from offshore lobsters. The areas of operations were Georges Bank, Cashes Ledge, Fipennies Ledge, Jeffreys Ledge, and Platts Bank.

A total of 7 otter-trawl sets and 1 gill-net set were made at stations worked. The trawl sets (45 minutes duration) made in waters from 40 to 55 fathoms yielded herring catches ranging from one-quarter to 110 bushels. The gill-net set yielded only 5 herring. Herring obtained during the cruise were from 19.3 to 35.1 centimeters (7.6 to 13.8 inches) long. Preliminary examination indicated that the 1960 year-class was dominant in all catches. Shipboard examination of gonadal development of adult herring indicated that the majority of fish had spawned. During the cruise 215 herring were sampled for blood which was frozen in liquid nitrogen. No lobsters were obtained.

A total of 33 one-meter net plankton tows lasting 15 minutes each (5 minutes at 10 meters, 5 minutes at 5 meters, and 5 minutes at the surface) were made during the cruise. A total of 362 herring larvae with a mean length of 11 millimeters or 0.4 inches (range 6-20 millimeters) were obtained. About 98 percent of the larvae were from stations on Georges Bank.

Drift bottles (5) and sea-bed drifters (5) were released at each of the plankton tow stations. In addition, at each station bathythermograph (BT) casts were made, surface salinity samples collected, and weather observations recorded. The salinity ranged from 32.7 to 33.1 and surface temperatures ranged from 52.0° F. to 60.0° F. Thermoclines were present at all deep-water stations (40 fathoms or more) and absent in all waters of 25 fathoms or less. The greatest temperature range occurred at one station where a difference of 6° was recorded between 50 and 75 feet.

M/V "Delaware" Cruise 64-11 (November 17-22, 1964): The objectives of this cruise by the exploratory fishing vessel Delaware were about the same as those of cruise 64-9 conducted in October. The areas of operation were Veatch's Canyon, Hydrographer Canyon, and Georges Bank.

Two lobster trawl sets were made during this cruise. The sets made in waters of 172 and 180 fathoms yielded 31 lobsters of which 25 were females and 6 males. Four of the females were berried. Lobsters that were hard-shelled totaled 22 (the 6 males were all hard-shelled). The mean weight of the catch was about $2\frac{1}{2}$ pounds and the range in weight was $\frac{1}{8}$ to 13 pounds each. In addition to those observations, rostrum to cervical groove, orbit to cervical groove, carapace length, and abdomen length measurements were recorded. A total of 28 lobster blood samples were obtained. On this cruise 2 herring trawl sets were made. The sets (45 minutes duration) made in waters of 50 fathoms yielded a total of 17 bushels of herring which were from 21.5 to 32.1 centimeters (8.3 to 12.6 inches) long. The 1960 year-class was dominant in the two catches, followed in percentage of occurrence by the 1961 year-class. Shipboard examination of gonadal development indicated that the majority of the sampled adult herring had spawned (a few running herring were observed), and that the 1961 year-class fish were in stage II and would not spawn until the fall of 1965. One hundred herring blood samples were obtained and frozen in liquid nitrogen.

Plankton operations on lobster consisted of 2 one-meter net plankton tows of 15 minutes duration (at the surface) but no lobster larvae were obtained. Those on herring consisted of 5 one-meter net plankton tows of 15 minutes duration (5 minutes at 10 meters, 5 minutes at 5 meters, and 5 minutes at the surface), 2 at approximately the same sites as where the lobster larvae plankton tows were made, and 3 on Georges Bank. A total of 90 herring larvae with a mean length of 14 millimeters or 0.6 inches (range 7 to 28 mm.) were obtained.

Sea-bed drifters (5) were released at each of the plankton tow stations. Bathythermograph (BT) casts were made at each station, surface salinity samples collected, and weather observations recorded. The salinity ranged from 33.5 to 33.6.

Note: See Commercial Fisheries Review, January 1965 p. 39.

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LARVAL HERRING DISTRIBUTION IN GULF OF MAINE STUDIED:

M/V "Rorqual" Cruise 8-64 (November 3-12, 1964): To determine the distribution of larval herring along the coast of the Gulf of Maine was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Rorqual. The area of operations was the coastal area between Cape Ann and Machias Bay within the 50-fathom line.

A total of 21 stations were occupied during the cruise. Oblique tows were made at each station at 6 knots using a Gulf III trawl with a Boothbay Depressor No. 3 and one with a Boothbay Depressor No. 1. The gear usually were towed individually for one mile each at three depths (surface, 10 and 20 meters), or about 33 to 66 feet. When the bottom terrain permitted, tows were made on bottom, halfway to the surface, and at the surface. Special tows were made with a Gulf III and meter net at the surface to obtain lobster larvae.

Nansen-bottle casts were made at each station to depths of 0, 10, 20, 30 meters (from 33 to 98 feet), and immediately above the bottom. Each cast was accompanied by a bathythermograph (BT) lowering, a photometer reading, and a Secchi disc reading. Sea-bed drifters (5) and surface drift bottles (5) were released at each station.

The Boothbay Depressors Nos. 1 and 3, attached to a trawl and Gulf III respectively, were equipped with depth-sounding gear and a record of their stability obtained at various depths and on the bottom.

The number of herring larvae caught by the Gulf III net was similar to that of other years during the fall spawning season. A large number of herring larvae were caught in the trawl which had not been used previously during fall cruises. The largest trawl catch was 2,293 herring larvae with the largest catches in the western portion of the area surveyed. Few larvae of other fish species were taken and no lobster larvae were obtained. No concentrations of fish were detected with the fathometer.

* * * * *

CONTINENTAL SHELF WATERS SURVEYED:

M/V "Albatross IV" Cruise 64-14 (December 13-18, 1964): To conduct an environmental survey of Continental Shelf in North Atlantic waters in the area bounded by longitudes 64° W. and 72° W. was the purpose of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV.

During the cruise, 75 hydrographic stations were occupied throughout the area. Water samples were obtained at depths of 1, 10, 20, 30, 40, 50, 75, 100, 150, 200, and 250 meters for the determination of temperature, salinity, dissolved oxygen, and chlorophyll. In addition, 24 hydrographic stations were occupied at a fixed position 60 miles south of Martha's Vineyard to determine the temporal fluctuations of those properties, and of zooplankton biomass. Fourteen fish survey stations were made on Georges Bank to complete the fall survey series.

Note: See Commercial Fisheries Review, Nov. 1964 p. 46.

North Pacific Fisheries Explorations and Gear Development

EXPERIMENTAL FISHING WITH PELAGIC TRAWL:

M/V "St. Michael" Cruise 5 (October 26-November 20, 1964): The objectives of this cruise off the coast of Washington by the exploratory fishing vessel St. Michael, chartered by the U. S. Bureau of Commercial Fisheries, were to: (1) conduct fishing trials with the "Cobb" Pelagic trawl rigged to fish off bottom while the otter boards retained bottom contact; (2) make underwater observations of fish behavior within the influence of various trawls; (3) determine the speed of water passing through different parts of a trawl; and (4) conduct fishing trials using two vessels to pull the "Cobb" pelagic trawl and the Bureau designed lampara trawl.

Near-bottom fishing with the Cobb pelagic trawl was undertaken off the coast of Washington in areas of known Pacific hake concentrations. Fishing was restricted by poor weather and a Pacific hake distribution change. The largest single catch was 17,500 pounds taken during a 30-minute tow. Subsequent underwater observations of the trawl indicated the configuration to be less than desirable with the near-bottom hook-up.

Scuba dives were made on the lampara trawl during fishing tests. Pacific herring (Clupea pallasii), surf smelt (Hypomesus

pretiosus), and three-spine stickleback (Gasterosteus aculeatus) were observed within the trawl. Large numbers of fish entered into the body of the trawl but resisted moving into the codend. Pacific herring and surf smelt maintained a swimming speed of about 2 knots for periods greater than 25 minutes and swam out of the trawl through the mouth and meshes during net retrieval.

Current measurements at various positions inside and out of the trawl were made while the trawl was being towed. Recordings of water current were made to determine actual swimming speed of fish within the trawl.

Several drags were made on this cruise by pulling various trawls by two vessels. Limited time permitted only enough drags to develop a suitable system of operation. One catch containing 8,000 pounds of herring and smelt was made.

Note: See Commercial Fisheries Review, January 1965 p. 39.

* * * * *

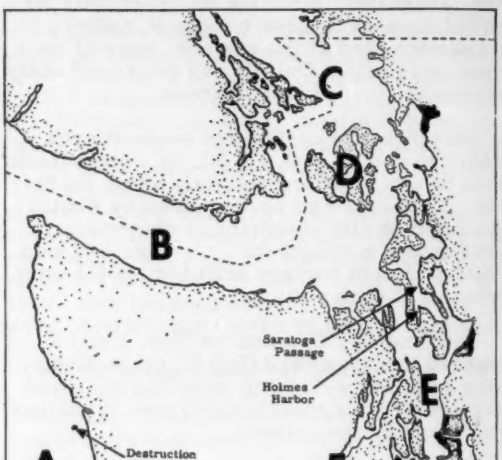
HAKE POPULATION SURVEY AND PELAGIC TRAWL TESTS CONTINUED:

M/V "John N. Cobb" Cruise 68 (October 19-November 20, 1964): This 5-week exploratory midwater trawling cruise was conducted in Puget Sound and along the Washington State coast by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

The primary objectives of the cruise were to: (1) investigate the distribution and abundance of hake; (2) evaluate the incidental catches of other pelagic fish taken with the midwater trawl; and (3) cooperate in evaluating the fishing effectiveness of a midwater net used in two-vessel trawling.

Echo-sounding transects were made to locate concentrations of hake, and their availability was measured with the "Cobb" pelagic (midwater) trawl. No concentrations of hake were found in the Strait of Juan de Fuca, Strait of Georgia, or the San Juan Islands area. Small catches of less than 180 pounds of dogfish (Squalus acanthias) and yellowtail rockfish (Sebastodes flavidus) per half hour of trawling were taken in the Strait of Juan de Fuca. Only dogfish were encountered in the Strait of Georgia where catches of less than 50 pounds per half hour of trawling were taken.

Relatively large concentrations of fish were found in Carr Inlet in southern Puget Sound, Holmes Harbor, and Saratoga Passage in northern Puget Sound, and Hood Canal. Three drags made in Carr Inlet primarily yielded dogfish with the largest catch of 20,000 pounds taken in a 30-minute drag consisting of 14,000 pounds of dogfish, 5,000 pounds of pollock (Theragra chalcogrammus), 800 pounds of hake, and 200 pounds of miscellaneous species. Approximately 90 percent of the catches taken in Holmes Harbor, Saratoga Passage, and Hood Canal were hake, with the individual hake catches ranging from 550 to 8,000 pounds per 30-minute drag. All the hake from northern Puget Sound were small, averaging about 35 centimeters (approximately 14 inches) in length compared to an average length of about 56 centimeters (22 inches) for hake caught off the Washington Coast.



Shows areas of operation during John N. Cobb cruise 68. Echo-sounding transects were made off the west coast of Washington State (A), in the Strait of Juan de Fuca (B), Strait of Georgia (C), San Juan Islands area (D), Puget Sound (E), and Hood Canal (F).

Although still present, hake appeared to be less concentrated off the Washington coast than during previous surveys in August and September 1964. Two 1-hour midwater trawl sets yielded catches of 674 and 970 pounds of hake. Yellowtail rockfish and dogfish were the only other species taken off the Washington coast.

During the last week of the cruise, the John N. Cobb participated in gear trials with the chartered vessel St. Michael in Bellingham Bay. During the trials, the two vessels towed a single net over known herring grounds. Four sets were made with the "Cobb" pelagic trawl and two sets were made with the newly developed pelagic trawl (having long wings in a configuration similar to a lampara seine). The highest catch rate obtained was 8,000 pounds of herring and smelt taken in a 1-hour drag.

For limited periods during the cruise, observers came aboard the John N. Cobb from the Washington State Department of Fisheries, Oregon State University, the University of Washington, and Washington Peninsula College.

Note: See Commercial Fisheries Review, Jan. 1965 p. 39; Dec. 1964 p. 52.

Oceanography

UNDERWATER CAMERA SYSTEM DEVELOPED FOR WORK AT GREAT DEPTHS:

An underwater camera for use at the ultimate ocean depth (37,000 feet) has been developed by a firm in Boston, Mass. Equipped with a strobe lighting system, the camera can be lowered from an oceanographic vessel by means of a cable until the camera is a few feet above the surface or object to be photographed. As the research vessel moves along, the camera can take pictures at the rate of 12 per second. The camera carries a 100-foot roll of 35 mm. film which enables it to take up to 500 pictures in one run.

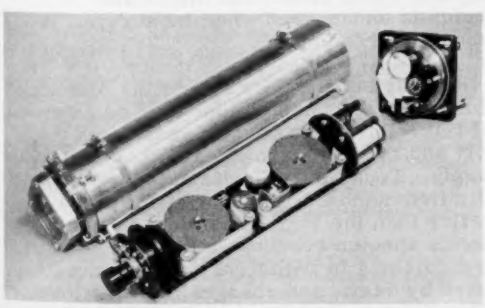


Fig. 1 - Underwater camera and pressureproof housing. The depth capability of the camera is 12,000 meters (39,000 feet).

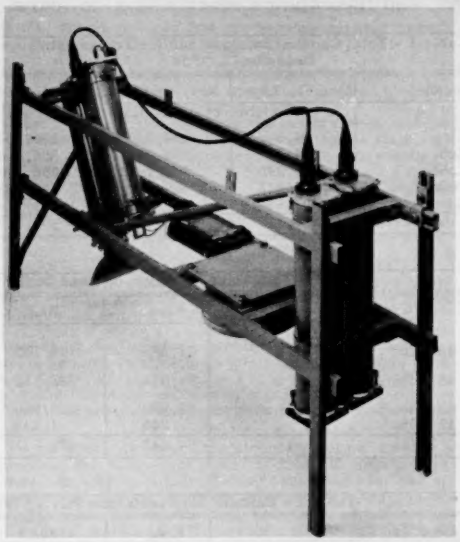


Fig. 2 - "Stereo" system for underwater photography. Mounted on the 6-foot steel frame are 2 cameras, light source, pinger system (for positioning cameras), and current compass. This system carries film to produce up to 500 pairs of bottom photographs covering 17 square meters or more per exposure.

A steel mount for the underwater camera, lighting system, and related components is available. The complex of photographic equipment is available in several designs including a lightweight fisheries system, a 2,300-exposure survey system, and 20-exposure Photo-Grab system. The underwater photographic systems have been used in deep-sea rescue, research, and mapping work.

Salmon

U. S. PACIFIC COAST CANNED STOCKS, DECEMBER 1, 1964:

Canners' stocks in the United States of Pacific canned salmon totaling 3,751,410 actual cases on December 1, 1964, were 280,990 cases less than stocks on hand November 1, 1964. Pink salmon made up 52.7 percent (2.0 million cases, mostly 1-lb. talls) of the total canners' stocks on December 1, 1964, followed by chums (783,000 cases, mostly 1-lb. talls), and reds (675,000 cases). The remainder of about 8.4 percent consisted of coho and king salmon. About 80 percent of

the pink salmon stocks on hand was 48 1-lb. cans, and the balance mostly 48 ½-lb. cans.

Table 1 - Total Canners' Stocks of Pacific Canned Salmon, December 1, 1964

Species	Dec. 1, 1964	Nov. 1, 1964	Oct. 1, 1964
	(No. of Actual Cases)		
King	94,648	104,399	134,337
Red	674,711	750,483	856,770
Coho	222,095	250,162	230,519
Pink	1,977,112	2,109,841	2,218,068
Chum	782,844	817,515	863,474
U.S. Total	3,751,410	4,032,400	4,303,168

SEATTLE, WASH., TO HAVE NEW $2 MILLION CANNED SALMON WAREHOUSE:

A $2-million automated warehouse for canned salmon storage is scheduled to be built on a 10-acre site in the Port of Seattle's Lower Dewamish Industrial District, with completion set for May 1966. The storage complex will include a 300,000-square-foot warehouse just across 26th Avenue SW. from Pier 5 and a 1,000-foot tunnel and underground conveyor system to transport salmon between the pier and warehouse. (Port of Seattle Reporter, December 1, 1964.)

Table 2 - Total Canners' Stocks on Hand December 1, 1964 1/ (Sold and Unsold), By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
			(Actual Cases)			
48 ¼-lb.	11,379	108,105	75,492	8,714	1,222	204,912
48 ½-lb.	74,034	338,582	42,987	346,666	113,076	915,345
48 1-lb.	8,970	226,866	91,494	1,573,104	646,541	2,546,975
12 4-lb.	265	1,158	12,122	48,628	22,005	84,178
Total	94,648	674,711	222,095	1,977,112	782,844	3,751,410

Table 3 - Canners' Shipments from July 1, 1964, to December 1, 1964, By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
			(Actual Cases)			
48 ¼-lb.	12,868	319,827	47,200	2,967	222	383,084
48 ½-lb.	62,808	348,512	11,388	256,802	45,015	724,525
48 1-lb.	13,151	271,188	77,015	824,820	232,066	1,418,240
12 4-lb.	151	3,792	9,368	50,769	17,537	81,617
Total	88,978	943,319	144,971	1,135,358	294,840	2,607,466

From November 1 to December 1, 1964, pink salmon stocks were lower by 132,729 cases, reds were down 75,772 cases, and chums were down 34,671 cases.

Carryover stocks at the canners' level amounted to 1,175,588 standard cases on July 1, 1964, which is the approximate opening date of the Pacific salmon packing season. Adding the new season pack of 3,922,356 standard cases brought the total available supply this season to 5,097,944 standard cases.

Shipments at the canners' level July 1, 1964, to December 1, 1964, totaled 2,607,466 actual cases (equal to 1,957,890 standard cases).

Information on canned salmon stocks is based on reports from canners who packed over 97 percent of the 1964 salmon pack. (Division of Statistics and Economics, National Canners Association, December 24, 1964.)

* * * * *

INTERIOR DEPARTMENT CLASSIFIES ATLANTIC SALMON AS "ENDANGERED" SPECIES:

Atlantic salmon has been included in a U. S. Department of the Interior list of "endangered" fish, birds, and mammals. A species is endangered when its survival is seriously threatened.

New Englanders once sought the Atlantic salmon as an important sport and commercial fish. But in the past 75 years both the sport and the commercial catch have dropped sharply. Today the Atlantic salmon is found in limited numbers in only 8 Maine streams. Smaller than the Pacific salmon, the adult Atlantic species reaches 10 to 15 pounds. It is succumbing to pollution, obstructions caused by dams, and changes in waterflows.

The list of endangered species was sent for comment to all state game and fish departments and other interested organizations. The cooperation of those groups is being sought for a stepped-up program to preserve endangered wildlife. The U. S. Department of the Interior is considering seeking legislation that would enable it to carry out a 10-year program of land acquisition to preserve the essential habitat of rare and endangered species.

Shellfish

HEALTH PROTECTION OF U. S. SHELLFISH CONSUMERS EMPHASIZED AT NATIONAL SHELLFISH SANITATION MEETING:

There was agreement by participants attending the fifth National Shellfish Sanitation Workshop on major improvements in the health protection of United States consumers of shellfish products, the U. S. Public Health Service announced November 20, 1964.

Conferees of the 5th National Shellfish Sanitation Workshop held in Washington, D.C., November 17-19, 1964, listening to Wesley E. Gilbertson, Chief of the Public Health Service Division of Environmental Engineering and Food Protection.

The three-day meeting, held November 17-19, 1964, at Washington, D. C., was attended by nearly 200 of the Nation's shellfish experts. Participants included shellfish sanitation control officials from 22 shellfish-producing states, representatives from the United States shellfish industry, Federal Government, and from Canada and Japan. Agreement was on the following major points:

1. The Cooperative State-U.S. Public Health Service-Industry Program for the Certification of Interstate Shellfish Shippers is functioning effectively in terms of consumer protection but should continue to strengthen its effectiveness through technical and administrative improvements.

2. Protection of shellfish growing areas from contamination must be a consideration of state and Federal agencies planning or conducting water pollution control and abatement programs.

3. The practice of re-laying shellfish from beds in contaminated growing areas should be carried out on a wider scale wherever practicable to reduce shellfish populations in contaminated areas.

4. Control over shellfish harvesting and transportation of the product to certified dealers should be tightened wherever possible. (In many areas that can be accomplished through inspection of designated "landing areas.")

5. Existing schedules of fines and penalties for harvesting shellfish in polluted areas should be reviewed by the producing states and the U.S. Public Health Service, with a view to better informing the courts on the health consequences of illegal sale of polluted shellfish and enabling the states to seek fines and penalties commensurate with the potential hazard to public health.

6. The states recognize the need for strong marine police supervision of polluted areas, harvesting practices and relaying,and that adequate funds be made available for those activities.

The Workshop also acted on scores of technical amendments to the U. S. Public Health Service "Manual of Recommended Practice for the Sanitary Control of the Shellfish Industry," all of which are aimed at strengthening the national program. These included controls over sport harvesting, a uniform national sanitation standard for all shellfish, adoption of depuration or the process of in-plant self-purification of shellfish from polluted or marginal waters, establishing shellfish preserves, adopting the practice of aquaculture.

Participants also were addressed by a manufacturer with a proposal for radar suveillance of shellfish growing areas to detect poachers. Other speakers discussed the use of chemicals on or near shellfish growing areas, relationship of shellfish sanitation to pollution abatement, advances in shellfish culture, work of the U. S. Public Health Service shellfish sanitation research centers, shellfish imports, heat-shock method of preparing oysters for shucking, and bacteriological standards for growing areas. (Press release, U. S. Public Health Service, Washington, D. C., November 20, 1964.)

Shrimp

UNITED STATES CONSUMPTION AT RECORD HIGH LEVEL:

The American people are eating more shrimp than ever before and the total consumed is climbing each year, reported the U. S. Department of the Interior, December 3, 1964. On a per capita basis, United States consumers are eating 75 percent more shrimp than in the years immediately following World War II.

Fig. 1 - Peeling shrimp by hand in a Florida breaded shrimp plant.

In the first 6 months of 1964, sales of fresh and frozen shrimp were up 22 percent over the same period a year earlier. Through August 1964, sales were still 18 percent above the first 8 months of 1963. There appears to be no single answer to why Americans are eating more shrimp on a per capita basis. But rising consumer purchasing power, growing consumer preference, development of new shrimp products, wider distribution, quality improvement, and more sales promotion have all been contributing factors.

Sales of frozen breaded shrimp products have increased rapidly since 1950, with new records being set each year. Sharp gains also have been made in sales of frozen peeled and deveined shrimp. Sales of fresh or frozen headless shrimp also have been increasing and shrimp sold in that form still holds the largest share of the market. Economists say that consumption of higher-priced foods such as shrimp is gaining as disposable personal income increases, a significant trend that promises well for the shrimp industry and with expectations of greater consumption as the trend continues.

Fig. 2 - Breaded shrimp moving on conveyor belt to weighing and packing line--Florida breaded shrimp plant.

The domestic shrimp industry is principally in the Gulf States. The United States also imports large quantities of shrimp (167 million pounds in 1963). Mexico has been the principal source with India and Latin American countries supplying increasing quantities in recent years.

Fig. 3 - Weighing and packing breaded shrimp in a Florida plant.

Shrimp prices generally, during the first 8 months of 1964, have been below the same months of 1963, but in August 1964 prices were just about equal to the five-year 1959-63 average for that month.

Shrimp supplies held in cold-storage warehouses on September 1, 1964, were above the 1959-63 average, but those supplies were not large in relation to current consumption. Domestic shrimp landings are generally lower for 1964, but imports for the first 8 months were slightly higher. Record cold-storage warehouse stocks at the beginning of 1964 contributed to the large supply available for consumption in the early months of this year.

The U. S. Bureau of Commericial Fisheries conducts extensive research into increasing shrimp populations, finding new shrimp fishing areas, and developing new and better gear with which to catch shrimp. Donald L. McKernan, the Bureau Director, said that historically the United States shrimp fishery has been a night-time operation. This is because shrimp burrow into the bottom sediment during daylight hours to avoid predators and consequently are not available for capture by trawl nets. He said research by the Bureau has resulted in the application of low-voltage electricity to the trawls. This technique stimulates shrimp from their burrows up into the water where they are caught by the trawl. The method permits day and night fishing which results in more efficient utilization of vessel and personnel. The low energy levels used have no harmful effect on shrimp or related organisms.

Scientists of the U. S. Bureau of Commercial Fisheries are also continuing research into the distribution, growth, survival, and abundance of shrimp. One goal is the development of culture methods for rearing shrimp from the egg to postlarval stages under seminatural conditions. In recent years, the Bureau has encouraged operators of larger and more powerful vessels to fish farther offshore where new shrimp resources have been discovered by the Bureau's exploratory fishing vessels. At the same time, improved packing and freezing techniques have extended the market area for shrimp, further aiding stability and economic growth in the industry.

South Atlantic States

FISHERY LANDINGS, 1963:

In 1963 landings of fish and shellfish at ports of the South Atlantic States (North Carolina, South Carolina, Georgia, and the East Coast of Florida), including landings from fresh-water areas of Florida, amounted to 371 million pounds, valued at $19.5 million ex-vessel. Compared with the previous year, this was an increase of over 65 million pounds, but a decrease of nearly $4 million. Record landings of blue crabs and larger catches of menhaden in North Carolina waters were the major factors in the increased landings. The decline in value was due to an almost complete "crop failure" of shrimp in nearly all South Atlantic waters. In addition to poor catches, the ex-vessel prices for shrimp were relatively low during the peak production periods.

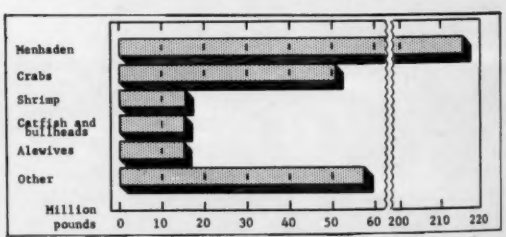


Fig. 1 - South Atlantic States catch, 1963.

There were 11,940 commercial fishermen in the South Atlantic area--569 less than in 1962. Most of the decrease was among fishermen in the shore and boat category. Ves-

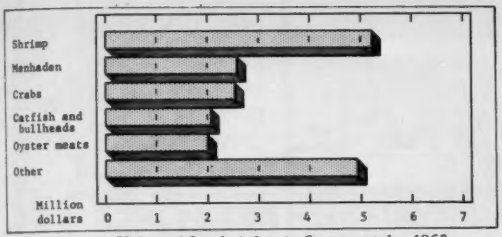


Fig. 2 - Value of South Atlantic States catch, 1963.

sels of 5 net tons and over numbered 1,157--an increase of 16 over the previous year.

Manufactured fishery products of the South Atlantic States in 1963 were valued at $40.1 million--a decline of $5.3 million compared with 1962.

Specifications

FEDERAL SPECIFICATIONS FOR CHILLED AND FROZEN FISH:

In Headquarters Notice to the Trade No. 155 (64) of November 13, 1964, the Defense Subsistence Supply Center (DSSC) distributed:

(1) Deviation List (of May 15, 1964) for Federal Specification PP-F-00381f, Fish--Chilled and Frozen

(2) DSSC Articles 345 concerning inspection of Fish--Chilled and Frozen

Those instructions will be cited in contracts for Fish--Chilled and Frozen--effective with awards made on and after January 4, 1965.

The Deviation List incorporates changes based upon currently available technical information. Those changes are being processed for inclusion in an amendment or revision of the Federal Specification on Fish--Chilled and Frozen.

United States Fisheries

COMMERCIAL FISHERY LANDINGS, 1964:

Total catch: The U. S. catch of fish and shellfish in 1964 (mostly for the first 11 months and in some instances various periods through December 22) was down about 449 million pounds (11 percent) as compared with 1963. The decline was chiefly in the catches of menhaden, Maine herring, shrimp,

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1964 and 1963

Species	Period	1/1964	1963	Total 1963
		. . . (1,000 Lbs.) . . .		
Cod:				
Maine	9 mos.	2,100	1,661	1,960
Mass. 2/	11 "	25,600	30,212	31,475
Total cod		27,700	31,873	33,435
Flounder:				
Maine	9 mos.	1,000	1,115	1,216
Mass.	11 "	85,400	85,580	91,881
Total flounder		86,400	86,695	93,097
Haddock:				
Maine	9 mos.	2,400	2,086	2,877
Mass. 2/	11 "	107,600	102,024	106,075
Total haddock		110,000	104,110	108,952
Halibut: 3/				
Alaska	Year	16,800	22,372	22,372
Wash. and Oregon	Year	9,000	11,871	11,871
Total halibut		25,800	34,243	34,243
Herring, Maine	Year	60,000	152,317	152,317
Industrial fish (Me. & Mass.) 4/	11 mos.	30,800	47,661	47,897
Mackerel:				
Jack 5/	10 mos.	62,700	84,538	98,078
Pacific 5/	10 "	33,200	30,986	36,974
Menhaden	Year	1,463,000	1,815,798	1,815,798
Ocean perch:				
Maine	9 mos.	45,300	51,229	63,945
Mass.	11 "	29,500	42,109	44,387
Total ocean perch		74,800	93,338	108,292
Pollock:				
Maine	9 mos.	1,000	2,065	2,389
Mass. 2/	11 "	9,200	9,182	10,727
Total pollock		10,200	11,247	13,216
Salmon:				
Alaska	Year	312,000	223,063	223,063
Washington	9 mos.	16,100	48,761	54,993
Sardine, Pacific	to Dec. 22	12,200	7,034	7,131
Scallops, sea, New Bedford (meats)	11 mos.	12,200	15,291	15,941
Shrimp (heads-on), So. Atl. & Gulf	Year	193,200	218,645	218,645
Tuna, Calif.	to Dec. 19	272,100	273,760	285,416
Whiting:				
Maine	9 mos.	25,300	15,942	15,942
Mass.	11 "	47,800	64,477	66,770
Total whiting		73,100	80,419	82,712
Total all above items. . . .		2,875,500	3,359,779	3,430,200
Other 6/		677,200	642,141	1/1,409,800
Grand total		3,552,700	4,001,920	1/4,840,000

1/Preliminary.
2/Landed weight.
3/Dressed weight.
4/Excludes menhaden.
5/Cannery receipts.
6/Includes landings for species not listed.
Note: Finfish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported as meats only.

jack mackerel, and Atlantic ocean perch. Landings of industrial fish were down 339 million pounds and food fish down 110 million pounds.

Menhaden: Landings in 1964 totaled 1.5 billion pounds--353 million pounds less than in the same period of 1963. Landings were down along both the Atlantic and Gulf Coasts, with heaviest losses in the Middle Atlantic area.

Salmon: It is estimated that the 1964 catch in Alaska was about 312 million pounds--an increase of 89 million pounds (40 percent) as compared with 1963. Landings of all species

Fig. 1 - Fishing fleet in a West Coast fishing port.

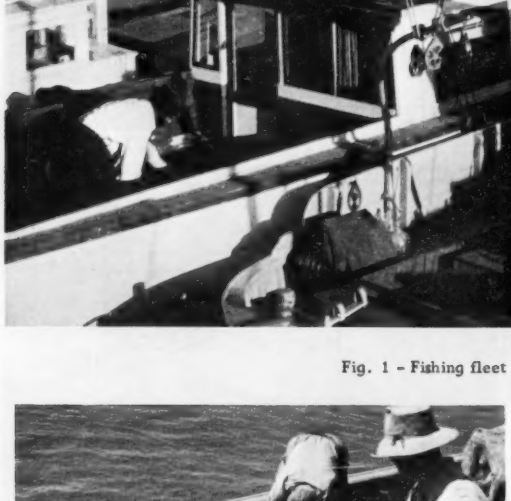


Fig. 2 - Washing a fish-pot catch at Cape May, N.J.

increased, with red, pink, and chum accounting for most of the gain.

Shrimp: The 193 million pounds landed in the South Atlantic and Gulf States in 1964 were 26 million pounds (12 percent) less than in the previous year.

Tuna: Landings of 272 million pounds in California to December 19, 1964, were scarcely 2 million pounds less than during the same period in 1963. In 1964, a 20-million-pound loss in the combined catch of albacore, bluefin, and skipjack tuna was largely offset by increased landings of yellowfin.

Maine herring: Production of Maine herring was only 60 million pounds in 1964--a decline of 92 million pounds (61 percent) as compared with 1963.

Ocean perch: During the first 11 months of 1964, landings in Massachusetts totaled 30 million pounds (down 12 million from the previous year); while Maine landings for the first 9 months of 1964 were 45 million pounds--a decline of 6 million pounds.

Mackerel: Landings through October 1964 were 63 million pounds--a decline of 22 million pounds as compared with the same period of 1963; while Pacific mackerel landings through October 1964 totaled 33 million pounds--a 2-million-pound gain.

U. S. Fishing Vessels

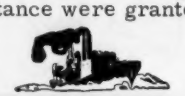
FIRST APPLICATION UNDER NEW FISHING FLEET IMPROVEMENT ACT:

The first application under the new Federal law to assist commercial fishermen in the construction of modern fishing vessels was received from the firm, Boat Pat-San-Marie, Inc., New Bedford, Mass., the U. S. Department of the Interior announced December 24, 1964. That new law--The Fishing Fleet Improvement Act of 1964--provides financial assistance to help offset the higher cost of vessel construction in United States shipyards compared to a representative foreign shipyard. The maximum assistance cannot exceed 50 percent of the domestic cost.

The Massachusetts firm proposes to order from a United States builder a 100-foot all-steel vessel to fish for scallops, groundfish, and flounders.

To qualify for assistance under the Fishing Fleet Imporvement Act a proposed vessel must be of advanced design, capable of fishing in expanded areas, and be equipped with newly developed gear. The vessel may not operate in a fishery if such operation would cause economic hardship to efficient vessel operators already operating in that fishery.

As required under the law, a notice was published in the Federal Register announcing a hearing on the application January 25, 1965. Hearings are announced on each application to allow any person who feels he may suffer economic hardship to present evidence demonstrating how he would be injured if the financial assistance were granted.



U. S. Foreign Trade

AIRBORNE IMPORTS OF FISHERY PRODUCTS, AUGUST-SEPTEMBER 1964:

Airborne fishery imports into the United States in August 1964 held fairly steady in comparison to the previous month, but declined in September mainly because of lower shrimp imports from Venezuela.

Total airborne shrimp imports in August 1964 were 1,103,100 pounds, the bulk of which consisted of fresh and frozen raw headless shrimp. Total airborne shrimp imports in September 1964 were 784,500 pounds. About 99 percent of the airborne shrimp arrivals in August and September 1964 entered through the Customs District of Florida. The remainder entered through the Customs Districts of Arizona, Puerto Rico, and New Orleans (La.) in August 1964, and through the Customs Districts of Arizona, New York (N.Y.), and Puerto Rico in September 1964. Spiny lobsters from British Honduras were the main shellfish item other than shrimp imported by air in August 1964. In September, spiny lobster tails from Honduras were the principal item other than shrimp imported by air.

U. S. 1/Airborne Imports of Fishery Products, January-September 1964 with Comparative Data

Product and Origin 2/	1964 August		1964 September		1964 Jan.-Sept.		1963 Jan.-Sept.	
	Qty. 3/	Value 4/	Qty. 3/	Value 4/	Qty. 3/	Value 4/	Qty. 3/	Value 4/
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Fish:								
Mexico	32.3	4.5	12.3	1.2	313.7	64.0	225.6	63.9
British Honduras	-	-	-	-	1.8	0.4	38.8	9.7
Honduras	-	-	-	-	-	-	16.5	4.3
Japan	-	-	-	-	-	-	2.0	8.2
United Kingdom	-	-	0.1	0.3	2.0	3.9	2.1	5.2
Iran	0.1	0.4	0.1	0.3	0.2	0.7	1.2	7.4
France	-	-	-	-	4.3	7.8	5.2	6.1
Rumania	-	-	-	-	0.9	9.0	-	-
Venezuela	-	-	-	-	4.6	1.7	-	-
U.S.S.R.	-	-	-	-	-	-	26.8	70.2
Denmark	-	-	0.5	0.5	1.5	2.8	-	-
Canada	-	-	-	-	14.8	4.8	-	-
Spain	1.8	0.9	2.1	1.0	7.8	5.2	-	-
Other countries	0.5	0.5	0.5	0.6	4.8	3.8	1.7	0.7
Total fish	34.7	6.3	15.6	3.9	356.4	104.1	320.6	175.7
Shrimp:								
Guatemala	-	-	-	-	-	-	141.8	74.0
El Salvador	-	-	-	-	159.1	96.8	233.6	157.1
Honduras	-	-	-	-	10.3	3.8	99.8	52.3
Nicaragua	1.4	0.8	-	-	79.6	45.6	448.7	142.1
Costa Rica	46.5	23.3	46.5	23.3	296.1	161.2	509.6	242.8
Panama	98.6	58.1	145.2	90.2	812.8	490.1	1,350.7	722.5
Venezuela	955.7	463.2	591.5	307.9	4,671.2	2,202.4	3,999.4	1,877.6
Ecuador	-	-	-	-	-	-	111.6	39.4
France	-	-	-	-	-	-	2.0	0.9
British Guiana	-	-	-	-	10.5	5.2	-	-
Mexico	0.9	0.6	1.2	0.8	2.1	1.4	13.2	6.9
Other countries	-	-	0.1	0.1	12.1	5.2	-	-
Total shrimp	1,103.1	546.0	784.5	422.3	6,053.8	3,020.7	6,911.0	3,315.6
Shellfish other than shrimp:								
Mexico	1.8	1.7	3.6	3.4	14.4	9.9	92.2	53.5
British Honduras	96.2	100.4	20.1	12.5	207.3	165.5	246.8	199.6
El Salvador	-	-	-	-	-	-	5.0	3.6
Honduras	-	-	53.5	68.0	72.9	78.7	5.5	3.3
Nicaragua	-	-	-	-	50.5	40.0	145.9	89.0
Costa Rica	9.3	4.7	-	-	18.6	14.2	73.8	60.1
Jamaica	-	-	9.3	13.4	52.9	49.6	51.0	40.1
Netherlands Antilles	-	-	-	-	-	-	32.8	20.9
Colombia	4.8	4.8	-	-	4.8	4.8	8.0	21.7
Ecuador	-	-	-	-	-	-	2.2	1.8
Tunisia	-	-	-	-	-	-	0.8	0.9
British Guiana	-	-	-	-	14.5	3.2	1.7	0.3
Canada	-	-	-	-	312.9	173.4	213.3	109.2
Venezuela	-	-	-	-	-	-	13.7	6.0
Dominican Rep.	5.1	2.2	2.0	0.4	16.2	4.7	22.2	20.9
Bahamas	-	-	-	-	10.6	6.8	5.3	5.2
Haiti	0.8	0.4	-	-	7.8	4.2	-	-
Other countries	-	-	-	-	0.6	0.7	7.5	6.3
Total	118.0	114.2	88.5	97.7	784.0	555.7	927.7	642.4
Grand total	1,255.8	666.5	888.6	523.9	7,194.2	3,680.5	8,158.7	4,133.7

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.
2/When the country of origin is not known, the country of shipment is shown.
3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
4/F.o.b. point of shipment. Does not include U.S. import duties, air freight, or insurance.
Note: These data are included in the overall import figures for total imports, i.e., these imports are not to be added to other import data published.
Source: United States Airborne General Imports of Merchandise, FT 380, September 1964, U.S. Bureau of the Census.

Fish fillets from Mexico accounted for the bulk of the airborne finfish imports in both August and September 1964.

Total airborne fishery imports in January-September 1964 were down 11.8 percent in quantity and 11.0 percent in value from those in the same period of 1963. The decline was due to smaller shipments of shrimp and spiny lobsters from Central and South American countries.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of the airborne imports consists of fresh and frozen products.

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IMPORTS OF CANNED TUNA UNDER QUOTA:

United States imports of tuna canned in brine during January 1-November 28, 1964, amounted to 42,801,114 pounds (about 2,038,148 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs. This was substantially less (11.2 percent) than the 48,238,342 pounds (about 2,297,064 standard cases) imported during January 1-November 30, 1963.

The quantity of tuna canned in brine which could be imported into the United States during the calendar year 1964 at the 12½-percent rate of duty was limited to 60,911,870 pounds (or about 2,900,565 standard cases of 48 7-oz. cans). Any imports in excess of that quota were dutiable at 25 percent ad valorem.

* * * * *

PROCESSED EDIBLE FISHERY PRODUCTS, OCTOBER 1964:

United States imports of processed edible fishery products in October 1964 were up 13 percent in quantity and 19 percent in value from those in the previous month. The increase was due mainly to higher imports of frozen groundfish fillets and blocks from Canada and Iceland. Among the canned items, imports in October were up for canned tuna and canned oysters, but down for canned sardines not in oil and canned crab meat.

Compared with the same month in 1963, imports in October 1964 were up 4 percent in quantity and 6 percent in value. The increase was due mainly to larger imports of canned albacore tuna from Japan, frozen ocean perch fillets from Canada, and groundfish blocks from Canada, Iceland, and Greenland. The increase was partly offset by lower imports of canned sardines in oil, canned salmon, canned crab meat, and canned oysters.

In January-October 1964, imports were up 1 percent in quantity and 5 percent in value from those in January-October 1963. During January-October 1964, there were larger imports of groundfish blocks (increase mainly from Canada and Iceland), ocean perch fillets, flounder fillets, yellow pike fillets, sea catfish fillets, halibut fillets, and canned sardines not in oil. But there was a decline in imports of canned tuna other than albacore, canned crab meat, canned oysters, canned salmon, canned sardines in oil, swordfish fillets, and haddock fillets.

U.S. Imports and Exports of Processed Edible Fishery Products, October 1964 with Comparisons

Item	QUANTITY				VALUE			
	Oct.		Jan.-Oct.		Oct.		Jan.-Oct.	
	1964	1963	1964	1963	1964	1963	1964	1963
	(Millions of Lbs.)				(Millions of $)			
Fish & Shellfish:								
Imports1/	55.2	53.0	447.9	441.6	16.8	15.9	135.2	128.9
Exports2/	4.6	3.6	38.3	26.5	3.1	2.1	20.3	12.7

1/Includes only those fishery products classified by the U.S. Bureau of Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i.e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).
2/Excludes fresh and frozen.

Exports of processed edible fish and shellfish from the United States in October 1964 were down 18 percent in quantity and 21.0 percent in value from the high level of shipments in the previous month. Canned salmon exports continued heavy. Shipments of canned salmon totaling 2.7 million pounds in October 1964 were down only 9 percent from the previous month. There was some decline in exports of canned sardines not in oil, but exports of canned shrimp were up.

Compared with the same month of 1963, the exports in October 1964 were up 28 percent in quantity and 48 percent in value. The increase was due mainly to larger shipments of canned salmon. Exports were also up for canned sardines not in oil, but exports were down for canned mackerel, canned shrimp, and canned squid.

Processed fish and shellfish exports in the first 10 months of 1964 were up 44 percent in quantity and 60 percent in value from those in the same period of 1963. In January-October 1964 there were much larger shipments of canned mackerel and canned salmon. Exports of canned shrimp and canned sardines in oil were also higher, but exports of canned sardines not in oil and canned squid were down.
Note: See Commercial Fisheries Review, January 1965 p. 50.

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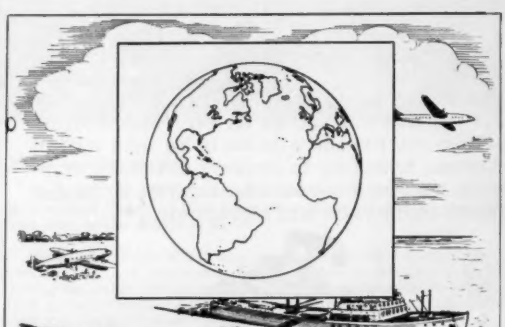
FISHERY PRODUCTS, 1963:

U. S. foreign trade in fishery products was valued at a record $547 million in 1963, an increase of $27 million as compared with 1962. Imports for consumption amounted to $491 million and exports more than $56 million. The value of imports was nearly $6 million more than in 1962, while exports increased $21 million.



Imports of edible fishery products in 1963 totaled 1.2 billion pounds valued at $395 million. Compared with 1962, this was a decrease of 5 percent in quantity and 2 percent in value. The loss in quantity was due chiefly to decreases in the imports of fresh and frozen tuna, sea herring, and canned sardines. Total

volume of imports of edible products would have been lower had not imports of groundfish fillets and blocks, shrimp, and sea scallop meats remained at record levels. Other important edible items received in considerable quantity in 1963 were fresh and frozen halibut, tuna loins and discs, fillets (other than groundfish), lobsters (common and spiny); canned tuna in brine; and pickled or salted cod, haddock, hake, pollock, and cusk.

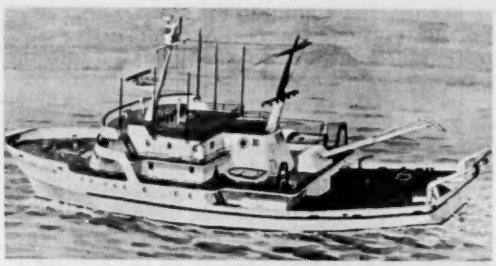
Imports of nonedible fishery products were valued at $96 million in 1963--15 percent more than in 1962. Increased receipts of fish meal and scrap (376,000 tons valued at $37 million) largely accounted for the gain in value. Fish meal accounted for nearly 39 percent of the value of all imported nonedible fishery products in 1963. Other important items were cultured and natural pearls ($18 million) and fish and marine animal oils ($8 million).

Exports of domestic edible fishery products totaled 64.7 million pounds valued at $30.4 million--an increase of 15 percent in quantity and 35 percent in value compared with the previous year. The gain was due to exporting greater quantities of fresh and frozen salmon and shrimp. Exports of nonedible domestic fishery products valued at $26.2 million were nearly double the value of the 1962 exports ($13.3 million). The increase was due to the record exports of 262.3 million pounds of fish oils. Nearly 76 percent of 1963 exports of oils were sent to Sweden, United Kingdom, and West Germany. Exports of foreign-produced fishery products during 1963 amounted to $8.5 million compared to $4.4 million in 1962.

Vessels

NEW OCEANOGRAPHIC RESEARCH VESSEL "DAVID STARR JORDAN" LAUNCHED: The newest vessel in the U. S. Bureau of Commercial Fisheries growing research fleet, the David Starr Jordan, was launched December 19, 1964, at Sturgeon Bay, Wis.

Completion of the David Starr Jordan is expected in May 1965. It will replace the 35-year-old Black Douglas at the Bureau of Commercial Fisheries Fishery-Oceanography Center at La Jolla, Calif. The new vessel honors the late David Starr Jordan, America's most prominent ichthyologist and the first president of Stanford University. After completion, the $1.8 million vessel will travel to La Jolla via the Great Lakes, St. Lawrence Seaway, and the Panama Canal.



Artist's conception of the Bureau of Commercial Fisheries' newest research vessel, David Starr Jordan, launched December 19, 1964.

The Daivd Starr Jordan is an all-welded steel vessel, 171 feet long with a 37-foot beam and 11-foot draft. It is powered by twin Diesel engines of more than 500 horsepower each. The David Starr Jordan will have a cruising speed of 12 knots and will be capable of remaining at sea up to 40 days. The cruising range will be more than 8,000 miles.

More than one-third of the vessel's enclosed space will be devoted to laboratories and support areas. It will have laboratories for biological specimens, hydrography, water chemistry, radioactive substances, and sonar surveying. The David Starr Jordan will have accommodations for 13 scientists and 22 crew members.

Additional features include underwater observation stations fore and aft and two 450-cubic-foot wells for live specimens. A unique bow propulsion system will enable the vessel to be pivoted in any direction and, when used in combination with the main engines, will move the ship sideways.

Virginia

MARINE SCIENCE TRAINING PROGRAM FOR TEACHERS AND STUDENTS: The National Science Foundation has awarded grants amounting to $33,740 to the Virginia Institute of Marine Science, according to the

Director of the Gloucester Point (Va.) research facility. The funds will be used during the summer of 1965 to conduct a marine science training program for 6 college teachers and 10 undergraduate students.

One grant will support a Research Participation for College Teachers Program and will give six teachers holding the Ph. D. degree an opportunity to use the research facilities at Gloucester Point. Teachers accepted into the program may engage in independent work or may participate in research activities in progress at the Institute. They will be under the supervision of experienced scientific investigators and their work will be related to marine problems of the Chesapeake Bay area. In order to be eligible for the program a teacher must be a full-time faculty member in some university or college in the continental United States. Each will give full time to research for 12 weeks June 14-September 3, 1965.

The Undergraduate Research Participation Program will fund the training of 10 students from colleges and universities of the continental United States who are interested in a career in marine research. They will be given an opportunity to work on research programs in progress and to perform a small research problem of their own under the direction of research personnel at the Virginia Institute. Preference will be given to students who have completed at least two years of college, and have definite ideas about the research they wish to undertake. Their program will extend from June 14-August 21, 1965.

Note: Both college teachers and undergraduates who are interested in securing information about either of the programs should write to: Robert S. Bailey, Director, NSF Programs, Virginia Institute of Marine Science, Gloucester Point, Va. 23062. All applications must be completed by March 1, 1965. (Virginia Institute of Marine Science, December 28, 1964.)

Whales

PACIFIC COAST CATCH, 1964:

The 1964 whaling season on the Pacific Coast closed November 30, 1964. The 2 California stations took a total of 253 whales in 1964 compared with 254 in 1963. The catch by species for those stations for 1963 and 1964 was:

Whale Species	1964	1963
	(No.)	
Sperm	63	77
Humpback	27	55
Finback	147	16
Sei	13	97
Blue	2	6
Bottlenose	1	2
Killer	0	1

The Oregon whaling station took only 1 whale in 1964 as compared with 5 in 1963.

Wholesale Prices

WHOLESALE PRICES FOR EDIBLE FISH AND SHELLFISH, DECEMBER 1964:

Lower prices for ex-vessel haddock and shucked oysters from November to December 1964 were responsible for a 0.6-percent drop from the previous month in the overall wholesale price index for edible fish and shellfish (fresh, frozen, and canned). All other prices for fresh and frozen fishery products listed in the December 1964 index were higher than in the previous month, but those for canned fish remained unchanged. At 109.5 percent of the 1957-59 average, the index in December 1964 was 1.9 percent higher than in the same month of 1963.

The subgroup index for drawn, dressed, or whole finfish dropped 0.5 percent from November to December solely because of lower prices at Boston for ex-vessel large haddock (down 7.7 percent); compared with December 1963 those prices were lower by 25.2 percent. December prices at New York City rose from the previous month for frozen dressed western halibut (up 5.2 percent because of substantially lower inventories) and Great Lakes round yellow pike (up 7.7 percent). As compared with December 1963, the subgroup index in December 1964 was lower by 2.8 percent--haddock prices were considerably lower; there was a slight drop in prices for frozen dressed king salmon; but prices for other items in the subgroup were substantially higher.

Loading a trailer with frozen fish products.

Wholesale Average Prices and Indexes for Edible Fish and Shellfish, December 1964 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			Dec. 1964	Nov. 1964	Dec. 1964	Nov. 1964	Oct. 1964	Dec. 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					109.5	108.9	111.6	107.5
Fresh & Frozen Fishery Products:					113.8	113.0	116.6	110.5
Drawn, Dressed, or Whole Finfish:					111.2	111.7	133.4	114.4
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.13	.14	99.5	107.8	135.5	133.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.38	118.3	112.4	164.1	96.1
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.83	.83	115.6	115.6	134.1	118.4
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.51	.50	76.1	74.6	79.8	61.2
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.70	.65	114.6	106.4	77.8	83.5
Processed, Fresh (Fish & Shellfish):					111.9	111.1	106.5	111.5
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.45	.44	109.3	106.9	97.1	138.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.90	.88	105.5	102.5	96.7	95.5
Oysters, shucked, standards	Norfolk	gal.	7.13	7.25	120.1	122.2	120.1	126.5
Processed, Frozen (Fish & Shellfish):					112.8	110.8	104.7	101.3
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.37	.35	92.5	88.7	91.2	98.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.40	.39	115.8	112.9	109.9	115.8
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.30	.30	105.2	103.4	103.4	121.0
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.96	.95	113.8	112.7	103.2	91.9
Canned Fishery Products:					102.2	102.2	103.1	102.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	21.25	21.25	92.6	92.6	94.8	102.4
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.56	11.56	102.6	102.6	102.6	98.2
Mackerel, jack, Calif., No.1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	6.25	6.25	105.9	105.9	105.9	97.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.00	10.00	128.3	128.3	128.3	114.9

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

The subgroup index for processed fresh fish and shellfish in December 1964 rose 0.7 percent from the previous month, but was down 0.4 percent as compared with December 1963. December prices were higher at Boston for fresh haddock fillets (up 2.2 percent) and at New York City for fresh South Atlantic shrimp (up 2.9 percent). Those were offset by a 1.7-percent drop in prices for shucked standard oysters. As compared with the same month a year earlier, fresh shrimp prices in December 1964 were 10.5 percent higher but were partly cancelled out by lower prices for other items in the subgroup.

Most products in the processed frozen fish and shellfish subgroup were higher-priced in December 1964 and the index rose 1.8 percent from the previous month. Prices for frozen flounder fillets were up 4.3 percent from November to December, but were 6.5 percent below those in December 1963. Price increases in December 1964 for other species of frozen fillets were nominal. Frozen shrimp prices (up 1.0 percent) at Chicago advanced slightly from the previous month but those prices were 23.8 percent higher than in December a year earlier. As compared with the same month in 1963, the subgroup index in December 1964 was 11.4 percent higher because of a much stronger market for frozen shrimp.

Prices for canned fishery products were mostly steady in December 1964 and there was some indication of improvement in the market outlook for canned pink salmon. Prices in that month for all canned fish items in the subgroup were the same as in the previous month and there was no change in the index. Except for pink salmon, prices for other canned fishery products in the subgroup--tuna, jack mackerel, Maine sardines--remained unchanged from October through December 1964. The 1964 Alaska pack of pink salmon was up nearly 20 percent from the previous year's pack but the new Maine sardine pack was substantially lower than that canned the previous season. The December 1964 subgroup index was only slightly lower (down 0.3 percent) than in the same month a year earlier. Although prices in December 1964 were higher for most of the canned fish items, those for pink salmon were down 9.6 percent from the same month in 1963.

International

FISH OIL

WORLD EXPORTS, JANUARY-JUNE 1963-64:

Exports of fish and fish-liver oils from the major exporting countries totaled 198,700 short tons in January-June 1964, down 11 percent from the 223,500 tons exported by the same countries in January-June 1963. The major exporting countries shown in the table below accounted for 92 percent of total estimated world trade in fish oil during 1963.

Gross Exports of Fish and Fish-Liver Oils from Selected Countries, January-June 1964 with Comparisons

Country	Jan.-June 1/1964	Jan.-June 1/1963	1/1963
	(1,000 Short Tons)		
Canada	7.6	2.4	6.4
United States	28.1	48.9	131.2
Chile	5.3	11.4	12.7
Peru	76.0	82.2	121.3
Denmark	14.5	9.0	22.9
West Germany	6.0	8.3	19.7
Iceland	17.5	22.4	71.2
Portugal	3.6	6.0	10.5
Angola	5.1	1.8	3.4
Morocco	1.8	2.9	5.7
South Africa Republic (incl. S.-W. Africa)	33.2	28.2	35.3
Total	198.7	223.5	440.3

1/Preliminary.

The United States, Peru, Chile, and Iceland were primarily responsible for the decline in fish oil shipments. Among the countries to register an increase in shipments during the January-June 1964 period were Denmark, South Africa, Canada, and Angola. (Foreign Agriculture, U. S. Dept. of Agriculture.)

FISHING VESSELS

INTERNATIONAL MEETING ON WOODEN FISHING VESSEL DESIGN AND CONSTRUCTION:

An International Meeting on Structural Research on Wooden Fishing Vessels was held September 15-18, 1964, in Copenhagen, Denmark, with 40 participants from 15 countries. The Meeting was convened by the Danish Wood Council in cooperation with the Fishing Boat Section of the Food and Agriculture Organization.

Subjects discussed at the Meeting included: (1) functional demands and strength requirements for fishing vessels; (2) principles of design specially concerning smaller fishing vessels; (3) methods of constructing wooden fishing vessels; and (4) materials used in wooden shipbuilding.

The participants agreed that careful consideration should be given to new design principles, such as shell construction, with a view to simplifying the construction of strong vessels. In this respect, the influence of hull shape on the strength of vessels was stressed. During the discussion of fishing vessel construction it was pointed out that cost was an important factor as to whether improved construction methods proposed by experts could be adopted.

The Meeting considered at some length the problems of bent-frame construction versus sawn-frame and laminated-frame construction methods. A floor discussion among the participants at the Meeting revealed that national preferences play an important part in wooden fishing vessel construction methods. Bent-frame construction is well established in the United States and Canada, but builders in other countries have some reservations about its use. Nevertheless, considerable interest was shown in the possibility of lowering hull construction costs by the use of bent-frame construction. The use of laminated frames was generally favorably commented upon. Laminated frames may not reduce costs in those countries where bent-frame construction is well established for vessels under 80 to 100 feet in length. But in Norway, which has traditionally used sawn-frame construction, good results are being obtained with laminated framing for vessels in the 50-foot range.

The main theme of the Meeting concerned research on scantling schedules for vessels. Those schedules set forth the size of structural materials required in a vessel in order for it to have seaworthy rating. In the past, scantling schedules have usually been related to the dimensions of a vessel and there has

International (Contd.):

been some variation in the requirements from country to country.

An important conclusion of the Meeting was that a nondimensional approach to scantling schedules should be encouraged. It was recommended that scantling requirements should be based on expected strains and stresses applicable to diverse methods of construction. Other conclusions of the meeting concerned international cooperation in scantling research.

The Meeting was attended by participants from Canada, Denmark, England, France, West Germany, Iceland, Ireland, Italy, Japan, Norway, Portugal, Scotland, Sweden, Turkey, and the United States. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, December 2, 1964.)

Note: See Commercial Fisheries Review, Sept. 1964 p. 64.

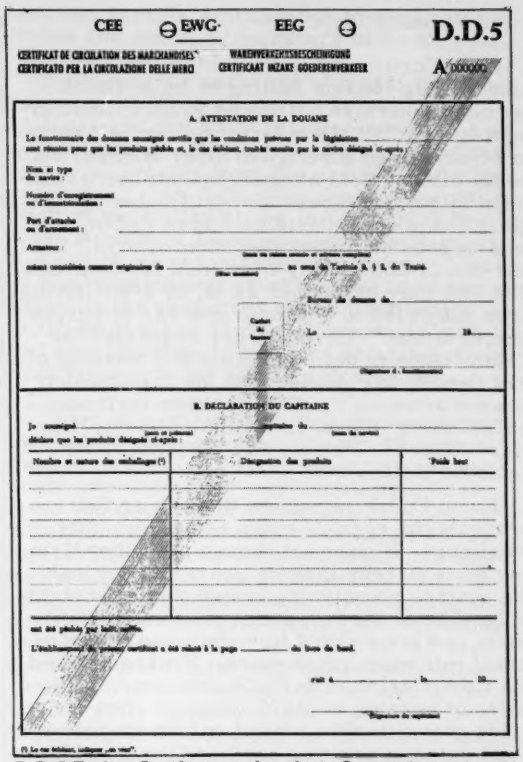
EUROPEAN ECONOMIC COMMUNITY

FISHERY POLICY DECISION MADE BY COMMISSION:

A Decision by the European Economic Community (EEC) Commission on the fishery policy of the Common Market was made on July 30, 1964, and was to have become effective November 1, 1964. Later, amendments to the Decision postponed the effective date to January 1, 1965, and also clarified certain articles of the July 30, 1964, Directive and Decision of the EEC Commission. One of the amendments had been made at the request of the German fishing industry to make it clear that frozen fish blocks were covered by the Decision.

The Decision relates to the establishment of a special method of administrative cooperation for the application of intra-Community treatment to products of the fish catch by vessels of Member Countries.

France had originally notified the Commission it was unable to conform to the Commission Decision. In defending their inability to live up to the Decision, the French stated the inequalities of social and safety regulations for the fishing trade. The French were given some additional time in which to explain their views but the Commission subsequently rejected the French request to postpone the application of the EEC fishery directive allowing direct importation of the catch of Member State fishing vessels into any EEC


CEE ⊖ EWG ⊖ EEG ⊖ D.D.5

CERTIFICAT DE CIRCULATION DES MARCHANDISES — WAREVERKEHRSBESCHEINIGUNG
CERTIFICATO PER LA CIRCOLAZIONE DELLE MERCI — CERTIFICAAT INZAKE GOEDERENVERKEER

A 000000

A. ATTESTATION DE LA DOUANE

B. DECLARATION DU CAPITAINE

D.D.5 Trading Certificate used to obtain Community treatment on fish products.

country. As of December 12, 1964, the Directive and Decision of the EEC Commission was in force. Commission sources, however, indicated they might not be fully complied with.

For Community trade in fishery products, the European Common Market had previously been unable to adopt a common fishery policy. However, by the application of the Rome Treaty intra-Community trade has been liberalized by tariff reductions and by the total elimination of quotas on most fish or fish products, or at least enlargement of the few remaining quotas under Article 33-34 of the Rome Treaty. This means that intra-Community trade has a preference over external fish imports. In order to be designated as fish for which Community treatment is to be applied, each Community fishing vessel up to now has had to return to a port of its home country and obtain a customs statement. With this statement the fishing vessel can then go and sell its fish catch in any Member State port.

International (Contd.):

Certain Community fishing interests--French tuna fishing vessels selling to Italy, Dutch herring fishermen selling to France, and German frozen fish block factoryships--all wanted to be able to go directly to other Member State ports without first stopping in their home countries to get the necessary certificates of origin. The present decision allows fishing vessels to present a specified form (Form D.D.5) and obtain Community treatment for their fish. The fish may be "either as is, or after having been subjected to a simple process to ensure preservation." Germany has requested the Commission to define broadly the meaning of that descriptive phrase, but the Commission has not acted on it. The Decision includes warehousing in associated States or territories: Greece, Turkey, and the African Associated States, etc.

Form D.D.5 only gives the fish or fish products the right of entry and Community treatment. It does not change any other Member State fishery laws or practices, so that the catches so entering cannot obtain the right to be sold at the fish auctions of unloading ports and are subject to embargoes under national minimum price plans. France notified the Commission in early September that imports of herring would be stopped when the price goes below the French minimum price. Thus catches entering another Common Market Member State port must be ordered in advance for it to be worth a captain's risk to unload there.

The Decision made by the EEC Commission is limited and a common fishery policy does not seem about to happen. A Commission source indicates they do have a general outline of a common fishery policy, but the most encouraging element was the probability of appointing a new director just for fishery matters.

In the discussion with the French on this matter, the Commission promised to attempt to accelerate the work on a common fishery policy. (United States Mission to European Communities, Brussels, November 20, December 8 and 9, 1964.)

GREAT LAKES FISHERY COMMISSION

EXTENSION OF SEA LAMPREY CONTROLS APPROVED:

A program to complete sea lamprey control treatment of streams feeding into Lake Michigan and for preparations to extend it to Lake Huron tributaries has been approved by the Great Lakes Fishery Commission which met at Washington, D. C., December 2-3, 1964, for a two-day interim meeting. The Commission is made up of three members each from Canada and the United States.

Donald L. McKernan, Chairman of the Commission and Director of the U. S. Bureau of Commercial Fisheries, said lampreys in Lake Superior have been reduced by about 80 percent as a result of stream treatment with selective chemicals. He recommended that research agencies study the desirability of allowing a limited commercial lake trout fishery in Lake Superior in the near future.

Lake trout, prized by both sport and commercial fishermen, were virtually eliminated by sea lampreys in Lake Huron in the 1940's and in Lake Michigan in the 50's. The lake trout in Lake Superior had fallen to dangerously low levels when stream treatment to destroy young lampreys was started in 1958.

Scientists reported a further decrease in lamprey attacks on lake trout in Lake Superior in the fall of 1964, and also described a widespread resumption of spawning which had been negligible since 1959 because of the scarcity of mature trout.

The Commission's chairman emphasized that scientists should continue to seek inexpensive chemicals effective against lampreys, but even less toxic to other organisms than chemicals presently known. He urged them to seek solutions which dissipate rapidly in water without contributing to pollution. He said that although problems in the upper Great Lakes are considerable, the Commission must direct more attention to fishery problems in Lakes Erie and Ontario.

It was also announced that the Governments of Canada and the United States have each agreed to appoint an additional member to the Commission to better represent interests in the lower lakes.

The Great Lakes Fishery Commission was established by Canada and the United States in 1955 and is responsible for the joint program to control sea lamprey and for recommending other measures to improve commercial and sport fishing in the Great Lakes.

Note: See Commercial Fisheries Review, February 1964 p. 62.

International (Contd.):

KING CRAB

ALASKAN FISHERY GIVEN PROTECTION BY NEW UNITED STATES-SOVIET AGREEMENT:

The United States and the Soviet Union on December 14, 1964, concluded an agreement relating to fishing operations in the Northeast Pacific Ocean. The agreement is designed to minimize damage by Soviet trawlers to the fishing gear of United States king crab fishermen in the Kodiak Island area of Alaska.

The agreement was recommended to the two governments by delegations of the two countries following discussions in June 1964 at Juneau, Alaska. It provides for the establishment of a number of areas in the vicinity of Kodiak Island (where United States king crab pots are concentrated) in which mobile gear (trawls used by the Soviets to catch bottom-fish) will not operate during the period July-October, inclusive. The agreement establishes procedures for amending, by mutual agreement between the Chief of the Soviet fishing fleet and local United States fishery officials, the boundaries of those areas or the periods during which they are reserved for fixed gear. It also provides for establishing new such areas by mutual agreement.

The agreement establishes in addition a system of direct radio communication between the Soviet fleet and fishery officials in Alaska. This system can be used for reporting to the Soviet fleet the positions of the United States king crab vessels outside of the areas mentioned above in order that special precautionary measures can be taken to avoid damage to them.

Under the provisions of the agreement the United States will undertake special research in cooperation with the Soviet Union in order to develop more effective means of marking and detecting fixed gear of various types.

The agreement will not prejudice existing rights of either Government.

Note: See Commercial Fisheries Review, Sept. 1964 p. 51.

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JAPAN-UNITED STATES AGREEMENT ON FISHING IN EASTERN BERING SEA:

An interim two-year agreement between Japan and the United States for fishing king crab in the Eastern Bering Sea was effected November 25, 1964, in an exchange of notes between Japan's Ambassador to the United States and the U. S. Secretary of State.

Following the exchange of notes, the Secretary said, "For a month, representatives of Japan and the United States discussed important issues affecting the fishermen of both countries arising from the presence of a Japanese king crab fishery on the Continental Shelf of the United States in the Bering Sea. When President Johnson signed the Bartlett Act, which makes possible the enforcement of rights which now exist or may be established in the resources of the Continental Shelf, he assured Japan that we would give full consideration to her long established king crab fishery in the Eastern Bering Sea.

"I am deeply gratified that our two Governments have agreed on an interim two-year modus operandi for accommodating our separate interests. Our representatives have faced the question of conservation of the resource, how to take account of Japan's historical fishery, our different legal concepts on the Continental Shelf Convention and the interest of the United States crab fishing industry in the area previously fished predominantly by Japan. The king crab in the east Bering Sea is not the only issue upon which we have, and can be expected to have in the future, differing interests and perspectives. I consider it encouraging for the future that by mutual understanding and rational balancing of our respective national interests we have reached an agreement which is equitable and to our common benefit. . . ."

In response, the Japanese Ambassador said, ". . . .The core of the problem lies in the fact that the two Governments hold fundamentally different legal positions with respect to the king crab resource in the said area. As a result of the long and patient consultation aimed at a realistic solution of the problem between two friendly nations, we have reached agreement in spite of difficulties.

"As the relationship between our two countries becomes closer and closer, we are bound to encounter many difficult problems. But, I believe that the present agreement very clearly demonstrates that, however demanding they are, these problems can be solved if we discuss matters frankly and constructively with determination and mutual understanding in the interest of firmer bond of friendship.." (Department of State, November 25, 1964.)

International (Contd.):

Editor's Note: Japan's king crab catch in the Eastern Bering Sea was limited to 185,000 cases per year for the next two years. The Japanese cabinet was reported to have agreed to the proposals and ratification was imminent. The two-year agreement reduced the present Japanese catch by about 21 percent. Included in the agreement are numerous other conservation measures.

Note: See Commercial Fisheries Review, January 1965 p. 26.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETS:

The Fisheries Committee of the Organization for Economic Cooperation and Development met for its 11th Session December 7-8, 1964, in Paris. The agenda for the meeting included: (1) a study on price systems; (2) general services to the fishery industry; (3) impact of recent changes in customs duties; (4) changes in import restrictions on fish and fishery products in member countries; and (5) the 1964 and 1965 work programs.

Note: See Commercial Fisheries Review, Sept. 1964 p. 56.

INTERNATIONAL CONVENTION FOR THE NORTHWEST ATLANTIC FISHERIES

PORTUGAL RATIFIES PROTOCOL CONCERNING HARP AND HOOD SEALS:

On October 2, 1964, Portugal deposited ratification of a Protocol to the International Convention for the Northwest Atlantic Fisheries of February 8, 1949. The Protocol (done at Washington, July 15, 1963) relates to harp and hood seals and is intended to bring those species within the responsibility of the Northwest Atlantic Fisheries Commission. The Protocol is not yet in force. (Bulletin, U. S. Department of State, November 2, 1964.)

Note: See Commercial Fisheries Review, Mar. 1964 p. 45.

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-SEPTEMBER 1963-1964:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Chile, Angola, Iceland, Norway, Peru, and South Africa/South-West Africa. Production and exports of fish meal by FEO countries during January-September 1964 were up substantially from the same period of the previous year. During the first 9 months of 1964, Peru accounted for about 66.7 percent of total fish meal exports reported by FEO countries.

Table 1 - Exports of Fish Meal by Member Countries of the FEO, January-September 1963-1964

Country	September		Jan.-Sept.	
	1964	1963	1964	1963
	... (1,000 Metric Tons) ...			
Chile	7.3	4.6	105.6	79.0
Angola	6.0	1.5	43.0	17.7
Iceland	12.3	6.1	90.1	56.6
Norway	12.8	5.6	141.9	56.6
Peru	82.2	73.3	1,098.6	881.1
So. Africa (including S. W. Africa)	18.3	20.2	168.5	125.8
Total	138.9	111.3	1,647.7	1,216.8

Table 2 - Production of Fish Meal by Member Countries of the FEO, January-September 1963-1964

Country	September		Jan.-Sept.	
	1964	1963	1964	1963
	... (1,000 Metric Tons). . .			
Chile	10.8	2.4	114.2	75.0
Angola	6.4	1.3	42.1	17.4
Iceland	15.7	13.3	102.3	77.3
Norway	12.3	14.1	146.9	102.1
Peru	49.5	47.8	1,059.4	826.7
So. Africa (including S. W. Africa)	18.3	20.8	231.4	216.1
Total	113.0	99.7	1,696.3	1,314.6

Canada

BRITISH COLUMBIA CANNED SALMON PACK, 1964:

The pack of canned salmon in British Columbia in 1964 of nearly 1.3 million cases was slightly higher than the 1963 pack and was about 2 percent more than the 1959-1963 five-year average pack of a little over 1.2 million cases.

British Columbia Canned Salmon Pack, 1959-1964

Species	1964	1/1963	1/1962	1/1961	1/1960	1/1959
	..... (Standard Cases--48 1-Lb. Cans)					
Sockeye (red)	343,276	158,375	297,717	398,236	226,912	256,388
Spring (king)	9,033	10,000	7,174	7,927	5,935	15,703
Steelhead	1,211	771	815	979	530	871
Blueback	36,392	11,384	12,097	12,527	23,345	10,114
Coho (silver)	167,883	146,099	175,638	234,047	69,237	215,098
Pink	463,968	757,452	1,188,661	661,458	219,658	458,747
Chum (keta)	229,855	119,190	134,483	95,400	87,884	138,865
Total	1,251,618	1,203,271	1,816,585	1,410,574	633,501	1,095,786

1/ Totals are based on final revised figures.

The pack from year to year is usually dependent on the cycle years for pink and sockeye salmon. The 1964 sockeye salmon pack was more than double that for the previous year, with the chum salmon pack nearly twice as much as was packed in 1963. The 1964 pack of pink dropped about 40 percent from

Canada (Contd.):

1963 and was only about one-third the 1962 pink salmon pack of 1.2 million cases.

Note: See Commercial Fisheries Review, January 1964 p. 43.

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BRITISH COLUMBIA HERRING FISHERY LABOR DISPUTE SETTLED:

A labor dispute in the British Columbia herring fishery was settled November 19, 1964, when fishermen voted to accept a medical plan offered by processors. Fishermen and processors had already agreed on a landed price of C$14.48 (US$13.41) per short ton for reduction herring, or C$2.08 (US$1.92) more than the C$12.40 (US$11.49) paid for British Columbia herring going for reduction during the 1963/64 season. According to some reports, the processors have estimated that the medical plan will add between 10 and 18 Canadian cents to the landed cost of a ton of herring. (The Fisherman, Vancouver, British Columbia, November 20, 1964.)

Editor's Note: Ex-vessel prices for herring in British Columbia are not comparable to prices in certain other countries because British Columbia processors furnish much of the equipment used in the fishery.

Note: US$1.00 equals Canadian $1.08.

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EXPANDED FISHERY PRODUCTS INSPECTION PROGRAM PLANNED:

An expanded inspection program of the Canadian Federal Department of Fisheries to ensure consistently high Canadian fishery products was forecast by Canada's Fisheries Minister in a statement on November 23, 1964. Opening the sixth biennial meeting in Ottawa of senior field and headquarters inspection officers of the Fisheries Department, the Minister said it was necessary for Canada to have uniform standards of fishery products to bring to consumers at home and abroad the best possible quality fish. Only in this way also, he said, could Canada compete successfully in world markets.

The Minister forecast stepped-up inspection activities within the next year to help maintain uniform quality standards of fishery products from the time the fish are caught, and through the processing and distribution stages until they reach the consumer. Steps already taken to maintain high-quality fishery products from the time of catching to the consumer were outlined by the Director of the Department's Inspection Service, who presided over the four-day meetings. He said new draft regulations were already in the hands of the provinces and the fishing industry and it was hoped that further discussions on the draft regulations could be held in the next few weeks when the provinces and the industry would have an opportunity to make their observations. He pointed out that the goal of both the Department of Fisheries and the industry was to make available to the consumer the best products possible.

The Director of Inspection Service also drew attention to the part Canada is playing in bringing about uniform world standards of fishery products through the Codex Alimentarius Commission, under the joint auspices of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) of the United Nations. Although Canada has one of the most progressive inspection programs in the world there was still much to be done, he added. International representation at the opening sessions of the meeting included the Director of Inspection, Department of Fisheries, Copenhagen, Denmark; the Assistant Director, Bureau of Standards, Pretoria, South Africa; and the Chief of Inspection, U. S. Bureau of Commercial Fisheries, Washington, D. C., as well as technologists of that Bureau's Technological Laboratory, Gloucester, Mass.

Following the opening session, various subcommittees were formed to discuss a wide range of subjects including the qualifications for inspectors; fresh and frozen fish plant registration; dockside inspection programs and boat inspection; the icing, processing and storage of fish; and the procedures for the inspection of fishery products.

The chiefs of inspection branches of the Canadian Fisheries Department, and other inspection officers, who attended the meeting, were from Newfoundland, the Maritimes, Quebec, the Central and Pacific Areas, and also from the Fisheries Research Board of Canada's technological station, Halifax, Nova Scotia. (Press release, Canadian Department of Fisheries, Ottawa, November 23, 1964.)

Canary Islands

FISH MEAL PLANTS RESTART PROCESSING:

The fish-meal processing plants at Las Palmas, Canary Islands, reported to total

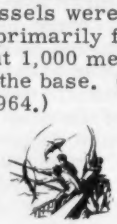
Canary Islands (Contd.):

about 7, have all recommenced operations. The plants are said to have started processing again as a result of the improved market outlook for fish meal. (Suisan Tsushin, November 20, 1964.)

Cape Verde Islands

LONG-LINERS FISH OUT OF CAPE VERDE ISLANDS TUNA BASE:

A total of 18 Japanese long-line vessels as of mid-November 1964 were fishing out of the Japanese tuna base at Sao Vicente, Cape Verde Islands. The vessels were mainly fishing off Recife, Brazil, primarily for albacore tuna, and landing about 1,000 metric tons of frozen tuna a month at the base. (Suisan Tsushin, November 19, 1964.)



Denmark

FISHERIES TRENDS--EXPORTS, LANDINGS, AND PROCESSING--JANUARY-SEPTEMBER 1964:

Exports to all Countries: Denmark's total exports of fishery products and byproducts (other than fish oil) in January-September 1964 increased 12 percent in value over those in January-September 1963, although the total quantity of the exports was almost identical in both periods. Exports of fresh fish and frozen fish, the 2 most important categories, increased 12 percent and 22 percent, respectively, in value. Danish exporters of fishery products enjoyed a good market in the first 9 months of 1964; their main problem was a shortage of supplies to meet the good demand. Total landings in Danish ports in the first 9 months of 1964 were up only 2 percent from the same period in 1963.

Prices have been profitable for Danish fresh and frozen products. The good market for fresh and frozen cod fillets is expected to continue into 1965. Fresh cod fillets are shipped as far as Italy, Switzerland, and Austria. Frozen fillets are exported to about 60 countries. A proposal by a large European distributor of frozen fish to take the surplus daily production of fish fillets from 6 processors in Esbjerg, Denmark, is being watched with interest by other Danish firms.

A large Danish processor and exporter in Fredericia has offered Esbjerg fishermen 7.56 U.S. cents a pound for gutted and iced haddock (medium and large size). The processor is seeking daily deliveries of 22,000 to 33,000 pounds, but fishermen may not respond because the small Danish crews find it difficult to clean fish at sea.

The leading buyer of Danish fishery products in January-September 1964 was West Germany, followed by the United Kingdom. Shipments to West Germany were up 21 percent in value from those in January-September 1963 due to larger deliveries of pond trout, herring fillets, and marine fish (other than unprocessed herring). The United Kingdom received fewer direct landings by Danish vessels, but much larger shipments of Danish frozen fillets.

Exports to the United States: Denmark's total exports of fishery products and byproducts to the United States in January-September 1964 were down 39 percent in quantity and 29 percent in value from those in the same period of 1963 due mainly to smaller shipments of cod fillets and pond trout. Exports of frozen cod fillets to the United States dropped because of greater demand and better prices in the United Kingdom and in Continental Europe. Exports of frozen pond trout to the United States were down because of Japanese price competition in the U. S. market, although Danish exporters are expected to re-enter selected U. S. markets. The decline in exports of frozen fishery products to the United States was partly offset by larger shipments of frozen flatfish and Norway lobster.

Danish exports of canned shrimp to the United States were down 23 percent in value and exports of canned herring and sprat were down 2 percent in value. Exports of canned herring and sprat may increase in late 1964 and early 1965 if Maine sardine canners in the United States end the 1964 season with a below-normal pack.

Table 1 - Danish Exports of Fishery Products to All Countries, January-September 1964 with Comparisons

Products	1/Jan.-Sept. 1964 Qty.	1/Jan.-Sept. 1964 Value		Jan.-Sept. 1963 Qty.	Jan.-Sept. 1963 Value	
	Metric Tons	1,000 Kr.	US$ 1,000	Metric Tons	1,000 Kr.	US$ 1,000
Fresh fish. products	139,967	250,856	36,374	140,700	222,800	32,306
Froz. fish. products	34,691	127,349	18,466	32,500	104,400	15,138
Processed fish	2/ 9,164	2/ 46,997	2/ 6,815	11,200	50,100	7,265
Fish meal, solubles, ensilage, & trout food	55,690	52,030	7,544	55,100	50,200	7,279
Total	239,512	477,232	69,199	239,500	427,500	61,988
Fish oils 3/	18,161	21,197	3,074	15,600	13,300	1,929

1/Preliminary data from Ministry of Fisheries.
2/Includes the following: cured fish 2,442 tons valued at Kr. 13.9 million ($2.0 million); canned fish 4,182 tons valued at Kr. 15.8 million ($2.3 million); canned shellfish 902 tons valued at Kr. 7.1 million ($1.0 million); and semipreserved fish 1,638 tons valued at Kr. 10.2 million ($1.5 million).
3/Fish oil data are shown separately because they are sometimes delayed.
Note: Danish kroner 6.9 equal US$1.00.

Table 2 - Danish Exports of Fishery Products to the United States, January-September 1964 with Comparisons

Product	1/ Jan.-Sept. 1964 Qty.	1/ Jan.-Sept. 1964 Value		Jan.-Sept. 1963 Qty.	Jan.-Sept. 1963 Value	
	Metric Tons	1,000 Kr.	US$ 1,000	Metric Tons	1,000 Kr.	US$ 1,000
Fresh & Frozen:						
Fillets:						
Cod	2,154	6,729	976	4,484	13,901	2,016
Other fillets	90	393	57	135	545	79
Pond trout	346	2,685	389	562	4,399	638
Trout eggs	1	75	11	1	67	10
Flatfish 2/	228	2,020	293	110	650	94
Norway lobster	160	3,102	450	142	2,953	428
Other	3/	3	4/	9	22	3
Cured Products 5/ Salted & smoked	27	103	15	34	73	10
Canned Products:						
Herring & sprat	434	2,133	309	401	2,182	316
Shrimp	93	950	138	130	1,228	178
Mussels	46	277	40	34	209	30
Other	25	157	23	31	154	23
Semipreserved products	12	153	22	13	140	20
Fish solubles	300	284	41	300	254	37
Total exports to U. S.	3,915	19,064	2,764	6,386	26,777	3,882

1/Preliminary data from Ministry of Fisheries.
2/Mostly turbot, brill, plaice, and sole.
3/Less than 0.5 metric tons.
4/Less than $500.
5/Mostly cod, salmon, trout, and eels.

Denmark (Contd.):

Table 3 - Value of Danish Exports of Fishery Products by Groups and Major Countries, January-September 1964 1/ with Comparisons

Destination	Value		Change from Jan.-Sept. 1963	
			Plus	Minus
	1,000 Kr.	US$ 1,000	. (Percent).	.
By Groups:				
Common Market (EEC)	207,000	30,015	16	-
European Free Trade Assn. (EFTA-including Finland)	198,000	28,710	18	-
East Bloc countries	22,000	3,190	-	10
Other countries	50,000	7,250	-	30
Total	477,000	69,165	12	-
Major Importers by Country:				
West Germany	129,000	18,705	21	-
United Kingdom	97,000	14,065	15	-
Sweden	59,000	8,555	37	-
Italy	33,000	4,785	18	-
Switzerland	30,000	4,350	11	-
United States	19,000	2,755	-	29

1/Preliminary data from Ministry of Fisheries.
Note: (1) Values do not exactly agree with those in table 1 due to rounding of figures.
(2) Fish oils not included.

Table 4 - Danish Production of Processed Fishery Products, Jan.-Sept. 1964

Product	Quantity
	Metric Tons
Canned:	
Herring & sprat	2,216
Mackerel	1,114
Other fish	3,800
Mussels	351
Other shellfish	821
Semipreserved:	
Herring & sprat	3,301
Other fish	305
Mussels	489
Fresh & frozen fillets:	
Cod	17,871
Cod-like fish 1/	1,002
Plaice	14,108
Other flatfish	787
Herring	25,584
Other fish	163
Smoked:	
Herring & sprat	1,554
Mackerel	1,486
Eels	520
Salmon & trout	345
Other fish & shellfish	152
Miscellaneous:	
Force meat 2/	1,259
Salted herring	92
Dry-salted cod	398
Other fishery products 3/	5,731
Industrial products:	
Meal	78,529
Oil	20,856
Ensilage 4/	6,106
Solubles	8,188

1/Haddock, coalfish, hake, ling, etc.
2/Ground fish, milk, and flour.
3/Excluding industrial products.
4/Chemically treated raw fish.

Processing: The data in table 4 listing the quantities of fishery products processed in Denmark have been available only since January 1964. Comparative data for 1963 are not available. Danish export data for the first 9 months of 1964 indicate, however, that more fish were frozen, smoked, canned, and semipreserved--and more fish meal and fish oil produced--than during the same period in 1963. In January-September 1964, it appears that a higher proportion of Danish groundfish landings was processed into fresh and frozen fillets, and a smaller proportion was sold as unprocessed fresh and frozen fish. Less fish was salted and less shellfish was semipreserved.

Between one-third and one-fourth of Danish herring landings in January-September 1964 were used for food. The balance went for meal and oil.

Table 5 - Danish Fishery Landings, January-September 1964 with Comparisons

Item	Quantity	Change from Jan.-Sept. 1963	
		Plus	Minus
	Metric Tons	. . (Percent) . .	
Landings in Danish Ports:			
By Danish vessels:			
Flatfish 1/	55,859	1	-
Cod	52,641	-	7
Cod-like fish 2/	38,137	-	200
Herring	256,185	23	-
Brisling	6,887	32	-
Mackerel	5,180	-	11
Eels	1,678	-	16
Salmon	777	-	59
Pond trout	6,405	12	-
Other fish 3/	196,250	-	23
Norway lobster	1,782	57	-
Shrimp	2,965	-	35
Mussels	11,058	37	-
Other shellfish	52	-	48
Starfish	2,449	151	-
Total by Danish vessels in Danish ports	638,305	-	4
By foreign vessels in Danish ports	135,739	45	-
Total landings in Danish ports	774,044	2	-
Landings in foreign ports by Danish vessels	3,649	-	6

1/Plaice, flounder, dab, common sole, etc.
2/Haddock, coalfish, hake, ling, etc.
3/Mostly industrial fish such as sand eels, Norway pout, etc.
Source: Ministry of Fisheries.

Landings: Total landings of fish and shellfish in local ports by Danish fishing vessels during the first 9 months of 1964 were 4 percent less than during the same period in 1963. Heavier landings of herring, brisling, pond trout, Norway lobster, mussels, and starfish almost offset substantial decreases in industrial and cod-like fish. Landings by foreign vessels (mainly Swedish deliveries of herring) were up 45 percent. Total Danish and foreign landings in Danish ports were up 2 percent. Danish landings in foreign countries (mainly cod and plaice in the United Kingdom) dropped considerably during the third quarter of 1964.

Ex-vessel prices generally have been good. With favorable weather during the final quarter of 1964, the 1964 landings by Danish fishing craft should match or exceed those of 1963. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, November 11, 1964.)

* * * * *

Denmark (Contd.):

AVERAGE PRICES FOR FISHERIES LANDINGS HIGHER IN JANUARY-JUNE 1964:

Prices received by Danish fishermen and vessels for landings at Danish ports were better in the first 6 months of 1964 than in 1963. This is confirmed in part by fewer complaints from fishermen, as well as the prices paid at auction and the prices fixed for industrial fish. In his speech at the opening of the 5th International Fisheries Fair at Copenhagen in September 1964, the Chairman of the Danish Fisheries Council pointed out that the higher prices made exporting of Danish fishery products more difficult. Later, in the weekly publication of the Danish Fisheries Association, a fishermen's representative concluded that most of the significant increases were in the higher-priced species while the more common varieties showed both increases and declines. He doubted that the increases were sufficient to bring average prices to the economic level that fishermen should have. On the contrary, he believed the prices indicated that a minimum price regulation was needed as much now as earlier.

Fig. 1 - Wooden craft of the Danish fishing fleet being buffeted by rough weather. Most fishing vessels are smaller than 50 gross tons.

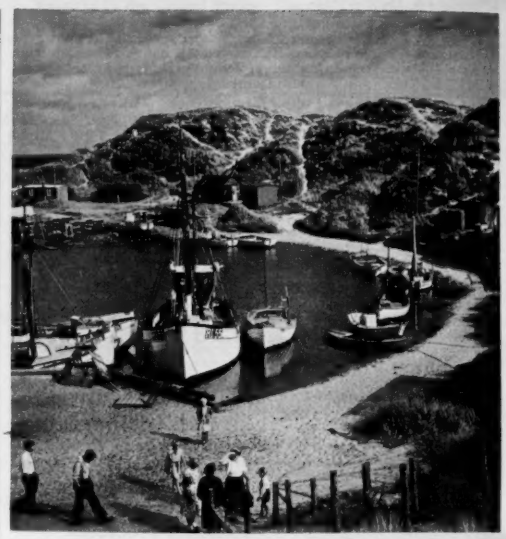


Fig. 2 - Fishing craft such as the RI 55 at the small fishing port of Hvide Sande catch mostly plaice and herring.

Table 1 - Comparison of Average Prices of Selected Species Received by Danish and New England Fishermen (U.S.), 1963 and January-June 1964

1963				January-June 1964			
Denmark		New England1/		Denmark		New England1/	
Name2/			Name3/	Name2/			Name3/
	(U.S. Cents Per Lb.)				(U.S. Cents Per Lb.)		
Cod (Torsk)			Cod	Cod (Torsk)			Cod
live	5.33	8.21(B)	large	live	5.33	7.50(B)	large
drawn	5.39	8.05(B)	market	drawn	5.59	8.29(B)	market
dressed	5.59			dressed	5.59		
Coalfish (Sej)	7.76	6.07(B)	Pollock	Coalfish (Sej)	8.02	6.05(B)	Pollock
Haddock			Haddock	Haddock			Haddock
(Kuller)	7.83	11.49(B)	large	(Kuller)	8.02	10.05(B)	large
		10.55(B)	scrod			8.91(B)	scrod
Hake (Kulmule)	24.93	6.91(B)	White hake	Hake (Kulmule)	18.15	11.12(B)	White hake
Wolffish (Havkat)	8.42	8.63(B)	Wolffish	Wolffish (Havkat)	7.56	5.93(B)	Wolffish
Halibut			Halibut	Halibut			Halibut
(Helleflynder)	38.54	32.73(B)		(Helleflynder)	34.00	28.57(B)	
Whiting			Whiting	Whiting			Whiting
(Hvilling)	5.72	4.60(G)	H & G	(Hvilling)	6.05	4.50(G)	H & G
		2.18(G)	Round			2.31(G)	Round
Dab (Ising)	7.70	6.75(NB)	Yellowtail	Dab (Ising)	9.01	8.18(NB)	Yellowtail
Witch (Skaerising)	11.44	11.56(G)	Gray sole	Witch (Skaerising)	10.06	10.34(G)	Gray sole

Note: Comparisons are for the same or similar species.
1/Prices at port of largest landings (B-Boston, G-Gloucester, and NB-New Bedford).
2/English and Danish names as used in Ministry of Fisheries annual report. Species listed are landed as drawn fish unless otherwise indicated.
3/U. S. names as used by U. S. Bureau of Commercial Fisheries. Groundfish are landed drawn, except hake which is dressed; flatfish are landed round; and whiting are landed headed and gutted or round.

Denmark (Contd.):

Table 2 - Average Prices for Selected Fish Species Landed at Danish Ports, 1963 and January-June 1964

Species English (Danish)	1963 January-December	1964 January-June
	. . . (U.S. Cents Per Lb.) . . .	
Angler (Havtaske)	29.93	27.03
Brill (Slethvar)	19.99	21.64
Common Mussel (Blaamusling)	.53	.39
Common sole (Tunge)	50.05	62.28
Eel (Aal)		
Silver (Blanke)	53.73	58.21
Yellow (Gule)	34.99	41.90
Eel pout (Kvabber)	9.21	9.93
Flounder (Skrubbe)	6.64	5.85
Gurpike (Hornfisk)	3.88	3.49
Herring (Sild)	3.42	3.55
Industrial (Industrifisk)	1.18	1.38
Lemon sole (Rødtunge)	17.89	20.06
Ling (Lange)	7.76	5.20
Liver (Lever)	3.29	4.08
Lobster (Hummer)		
Norway (Dybvands)	31.24	27.23
Common (Almindelige)	111.35	108.32
Lumpsucker (Stenbider)		
Male	3.55	2.57
Female	2.24	2.96
Mackerel (Makrel)	6.05	5.33
Octopus-Squid (Blaeksprutte)	15.00	12.96
Pike (Gedoe)	26.97	25.39
Piked dogfish (Pighaj)	4.67	5.99
Plaice (Rødspaette)		
Living	10.98	12.69
Drawn	10.52	13.04
Porbeagle (Siloehaj)	19.14	25.45
Rays & Skates (Rokkerskader)	10.39	12.56
Roe (Rogn)	15.13	15.59
Salmon (Laks)	121.94	129.37
Shrimp (Rejer)		
Deepwater (Dybvands)	22.23	25.78
Ordinary (Almindelige)	108.92	115.69
Sprat (Brisling)	8.55	7.37
Tunny (Tunfisk)	29.33	-
Turbot (Pigvar)	22.76	27.10
Weever (Fjaesing)	4.74	6.64

The conclusions of the fishermen's representative were based on average prices obtained from the Ministry of Fisheries. Some of the species for which average prices were higher in the first 6 months of 1964 than in 1963 included: pollock, haddock, halibut, plaice, salmon, turbot, and shrimp.

Table 3 - Percentage of Quantity and Value of Selected Species Landed at Danish Ports in 1963

Species	Quantity	Value
	. . . (Percent) . . .	
Plaice	7.3	24.2
Herring	34.9	18.2
Cod	8.3	14.3
Industrial fish (mostly sand eels, Norway pout, etc.)	34.8	12.6
Eels	0.5	6.3
Salmon	0.1	4.3
Shrimp	0.6	3.8
Whiting	6.9	2.8
Other	6.6	13.5
Total	100.0	100.0

Fig. 3 - Fish auction at Esbjerg, one of Denmark's leading fishing ports.

Fig. 4 - Bluefin tuna ready for auction at Skagen, another leading Danish fishing port. Tuna are fished mostly in the summer months.

A substantial increase in plaice prices (about 4 cents a pound) for the first 6 months of 1964 over prices for 1963 was due, in part,

Denmark (Contd.):

to the relatively low prices paid during the summer of 1963 when an unsuccessful minimum price plan was instituted and later withdrawn. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, November 24, 1964.)

* * * * *

RINSING WATER PURIFICATION PROCESS FOUND PROFITABLE IN FILLETING PLANT:

Purification of the rinsing water used in a Danish herring filleting plant has resulted in a very profitable yield of oil and solids. The plant operator encouraged a centrifuge manufacturer to devise the process which has been operating satisfactorily and most profitably for several months in Hirtshals, a large herring fishing and processing port in Jutland.

In machine filleting of fish there is an appreciable loss of solids during the filleting and handling processes and a substantial loss of oil if fat fish such as herring are being used. The solids and the oil are mixed in the large volume of water used for rinsing and cleaning purposes during the operation. This mixture usually is discharged into the sea and is a source of pollution.

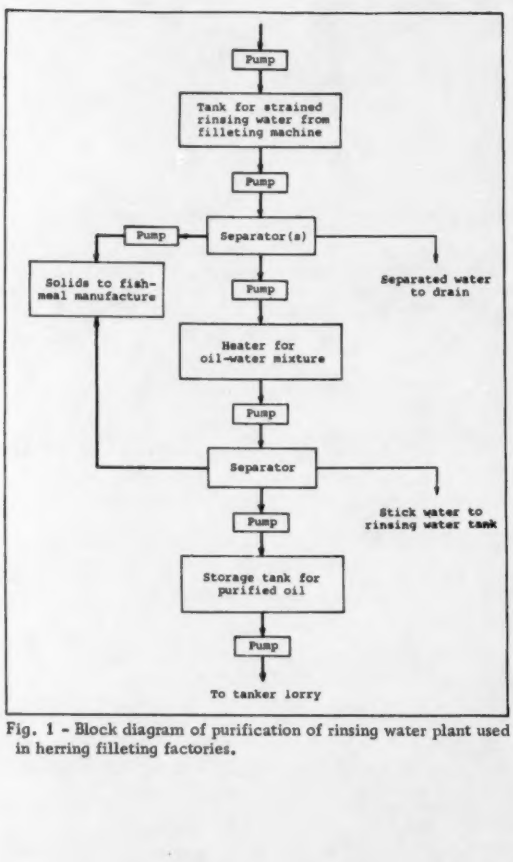


Fig. 1 - Block diagram of purification of rinsing water plant used in herring filleting factories.

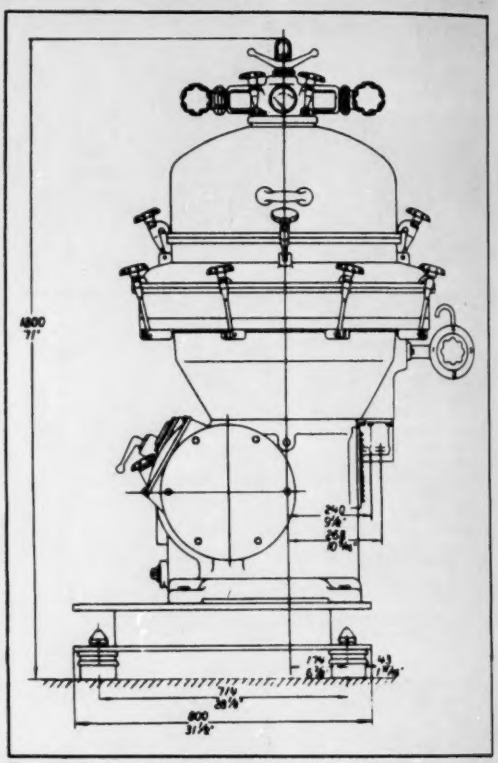


Fig. 2 - Self-cleaning separator, one of several pieces of equipment used in purifying rinsing water.

Experiments conducted in Denmark to recover oil and solids from the rinsing water resulted in a relatively simple centrifuging process. It handles a large volume of rinsing water (of which only a small portion needs to be heated) and produces readily salable oil and solids.

Process: In the process, all water and waste material are collected continuously in the plant and screened. The larger pieces of fish meat are screened out and sent to a fish-meal plant. The screened rinsing water is then pumped from the receiving tank to a centrifugal sludge separator and centrifuged without being heated. The separator produces a three-phase separation of solids, an oil and water mixture, and waste water. The solids are ejected periodically and automatically. They contain about 25 percent dry matter and are sold to a fish-meal plant which feeds them directly into its cooker. The oil and water emulsion contains about 70 percent oil. It is pumped to a tank where it is heated to 60°C. (140°F.) by a gas flame under the tank. A heat exchanger was tried but clogged quickly. Steam caused emulsions difficult to break. The waste water is discharged with about 2 percent solids and about 0.4 percent oil. (Precipitation of the protein in the waste water, using Kremodan as a precipitating agent, has been tested experimentally, but it is not yet certain that the protein precipitated could be sold for enough to make the operation profitable.)

The heated oil and water mixture is pumped to a centrifugal separator which also performs a three-phase separation. The small amount of fine solids is ejected at intervals by manual rather than automatic control, and added to the solids from the first sludge separator. The purified oil is pumped to storage. The waste water is piped back to the rinsing water tank.

Denmark (Contd.):

The sludge or wet solids produced have been sold to a fish-meal plant for the same price as industrial fish--about 18 øre a kilo (1.18 U.S. cents a pound). Since the oil comes from fresh herring it contains 1 percent or less of free fatty acids and has sold for 1.35 kroner a kilo (8.9 cents a pound) to a fish-meal plant. It is especially desirable for mixing with other fish oils to average down their much higher free fatty acid content.

The Danish filleting plant has made very substantial profits on its purification process in recent months while filleting herring. Tests showed that from herring averaging 16.5 percent oil, the purification process recovered from the rinsing water about 5.5 percent wet solids and 2.2 percent oil, expressed as percentages of the amount of herring received for filleting, excluding overweight which may be about 5 percent.

Plant specifications: The manufacturer supplies plants in the following capacities:

Size	Rinsing Water from Raw Herring	Equal to U. S. Gallons Per Hour
I	12 metric tons (26,400 lbs.) raw herring per hour	6,600
II	6 metric tons (13,200 lbs.) raw herring per hour	3,435
III	1.8 metric tons (3,960 lbs.) raw herring per hour	1,055

The manufacturer states that the Size I plant, operating on rinsing water from filleted herring with 16.5 percent oil, would produce:

650 kilos (1,430 lbs.) per hour of wet solids worth 1.05 cents per lb.
260 kilos (570 lbs.) per hour of purified oil worth 8.9 cents per lb. for a gross profit of about $65 an hour.

All sizes of plants are automated to the point where they may be operated with one man. Cost, power consumption, and space requirements are:

Size	Cost	Power Required1/	Space Required2/
I	$72,500	60 kw.	32' 2" x 22' 11"
II	$43,500	35 kw.	2211" x 18' 1"
III	$29,000	20 kw.	19' 8" x 16' 5"

1/Power consumption is lower during operation.
2/Ceiling height required is 10'8". Plant can be installed in smaller space and with lower ceiling, if necessary. Measurements assume collecting tank for rinsing water and purified oil storage tank are outside room.

The first plant was conceived by a large and progressive processor and exporter of Danish fishery products, and the process and plant were developed and installed by a Copenhagen engineering firm. Additional plants are on order by several fishery firms in Denmark and West Germany. Outside of Denmark, the Faroe Islands, and Iceland, the plants will be sold and serviced by an internationally known worldwide distributing organization. The distributing firm's United States representative is located in Poughkeepsie, N. Y. However, the plant and process are so new that it is doubtful that the United States affiliate has much, if any, knowledge of it. Additional technical information may be available from the Copenhagen firm which has issued an illustrated leaflet briefly describing the process in English.

In view of the highly competitive nature of the filleting industry in Denmark, it is expected that all filleting plants of appreciable size which fillet oily fish will have to install purification plants. Production and sale of the formerly wasted oil and solids will be as necessary and profitable an adjunct to filleting operations as the sale of frozen fillet waste to mink farms.

Pressure to install such plants also may come from municipal sources as a means of preventing harbor pollution. Skagen, which is Denmark's second largest fishing port, already is requiring fish plants to clean up their waste water.

The ability to centrifuge rinsing or waste water without heating it makes it possible to install a sludge separator on fishing vessels to process the drainage from the catch and recover an oil and water mixture (mostly oil) for further purifying ashore. This is expected to be profitable for all vessels carrying oily fish for either food or industrial use. Installations in plants that salt herring and canneries also are being contemplated.

In the United States it would appear that the composition of rinsing or waste water in filleting (ocean perch) plants, canneries (which pack sardines, mackerel, salmon, and tuna) and the drainage water in fishing craft might be checked. If the content of oil and solids is high enough, a profit might be made while at the sametime a source of pollution is being eliminated. (United States Regional Fisheries Attache for Europe, Copenhagen, December 9, 1964.)

Note: (1) One Danish krone equals US$0.145 and one kilo equals 2.2046 lbs.
(2) See Commercial Fisheries Review, August 1964 p. 61.

Faroe Islands

FISHERIES TRENDS, NOVEMBER 1964:

Faroese-West German Landings Agreement: On November 18, 1964, representatives of the Faroese Government signed an agreement with West German authorities which permits direct landings of fresh white fish in German ports by Faroese vessels. The term "white fish" includes cod, haddock, coalfish (pollock), plaice, and halibut, but not ocean perch or herring. The agreement became effective December 1, 1964, but can be terminated on April 30, 1965. Unless terminated, it continues automatically for additional one-year periods. Under the agreement, the Faroe Islands are given the same rights as Iceland with regard to direct landings on West Germany. The mutual prohibition against direct landings by Danish vessels in West Germany or by Germany vessels in Denmark is not affected.

The Faroese expect that the new agreement will aid them in marketing fresh fish formerly delivered to Great Britain. Limits have been placed on Faroese direct landings in Great Britain which may divert sizable Faroese landings elsewhere, particularly in the October and January quarters. It has been estimated that as much as 6,000 to 8,000 metric tons of Faroese fresh fish might be landed in West German ports during the October and January quarters. A Faroese representative in Hamburg will inform the Faroese fishermen of market conditions in Germany so that the Faroese landings may be regulated to obtain the best possible prices.

Rumanian Factory Trawlers off Faroe Islands: A State-operated Rumanian fisheries company has sent 2 new 4,000-ton factory trawlers to fish the waters between the Faroe Islands and Iceland, according to a November 24, 1964, report in a Danish newspaper. One of those vessels, the "Constanta," stopped in Thorshavn for minor repairs. The vessel is a stern-trawler with a crew of 81. It is equipped with the most modern technical fishing and navigating equipment and also serves as a mothership for two 50-ton motor cutters. The two factory trawlers were built in Japan and carried Japanese technicians on their first voyage.

United States Charter of Faroese Vessel for Tuna Fishing in Somali Not Completed: Plans for a United States charter of a Faroese fishing vessel for use in Somali were cancelled at the last moment because a concession from the Somali Government to the United States firm was changed from 15 to 8 years. The Faroese freezer vessel Skugvur was to have been chartered by a Massachusetts cold-storage firm for 4 to 6 months to operate in the tuna fisheries off Somali. It was to fish for tuna and also accept the catches of other vessels until a freezing plant had been completed in the Gulf of Aden by the United States firm. Its crew was to teach Somali fishermen fishing and catch handling methods. Since the charter plans were cancelled, the Skugvur will take a cargo of frozen cod blocks to Gloucester, Mass., after which the vessel may long line for tuna in the Caribbean area.

Norwegians Desire Landing Rights in the Faroe Islands: Norwegian fishermen are reported to be dissatisfied because they have no landing rights in the Faroe Islands while Faroese fishermen may land fish in Norway. Norwegian fishermen would like permission to freeze bait and process fish in

Faroe Islands (Contd.):

Faroese waters, especially when forced to seek shelter during stormy weather. In addition, they would like to land and sell the fish which they can not process on the trip back to Norway. The Norwegians say they often have had to throw fish overboard. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, December 2, 1964.)

French Somaliland

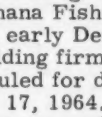
TUNA EXPLORATIONS IN THE GULF OF ADEN:

In late 1964, the French tuna vessel Tutina was exploring tuna prospects in the Gulf of Aden with a view toward establishing a tuna fishing installation in French Somaliland at the port of Djibouti. For the same reason, the exploratory fishing vessel Tadjourah has been investigating tuna fishing possibilities since July 1964 in the Gulf of Tadjourah off French Somaliland. (United States Embassy, Addis Ababa, December 19, 1964.)

Ghana

JAPANESE COMPLETE SECOND STERN TRAWLER FOR GHANA:

The second of 10 large stern trawlers ordered by the Ghana Fisheries Corporation was completed in early December 1964 by a Japanese shipbuilding firm in Osaka. The vessel was scheduled for delivery to her owners on December 17, 1964. The vessel (1,850 gross tons) will be manned by 25 Japanese nationals in accordance with a technical services agreement concluded between Japan and Ghana. (Suisan Tsushin, December 11, 1964.)



Greece

OFFSHORE FISHING FLEET, 1963:

The Greek fleet of trawlers and purse-seiners operating in offshore waters of the Atlantic and Mediterranean as of December 31, 1963, included 23 Atlantic freezer-trawlers with a total tonnage of 14,558 tons; 364 other trawlers with a total tonnage of 15,383 tons; 293 purse-seiners with a total tonnage of 4,652 tons; and 139 mixed vessels (serving as trawlers and seiners) with a total tonnage of 2,849 tons. Total tonnage of the 819 vessels in the offshore fishing fleet amounted to 37,442 tons. (Alieia, September 1964.)

Haiti

CONSTRUCTION OF NEW FISH PROCESSING PLANT COMPLETED:

The construction of a fish freezing and packing plant in Haiti by a United States firm was completed this past summer. Dedication ceremonies held on August 27, 1964, were attended by United States and Haitian officials. The plant, which is designed for freezing and exporting fish and shellfish products, is reported to be completely equipped but as of the end of November had not started operating. The exact location of the plant was not given but is believed to be in Port-au-Prince. (United States Embassy, Port-au-Prince, November 27, 1964.)

Iceland

EXPORTS OF FISHERY PRODUCTS, JANUARY-SEPTEMBER 1964:

During January-September 1964, there was an increase in exports of salted fish (uncured), frozen fish fillets, cod-liver oil, fish

Icelandic Fishery Exports, January-September 1964 with Comparisons

Product	Jan.-Sept. 1964 Qty.	Value f.o.b.		Jan.-Sept. 1963 Qty.	Value f.o.b.	
	Metric Tons	1,000 Kr.	US$ 1,000	Metric Tons	1,000 Kr.	US$ 1,000
Salted fish, dried	728	18,425	427	1,579	32,065	744
Salted fish, uncured	22,756	352,316	8,174	17,569	221,266	5,133
Salted fish fillets	1,014	14,656	340	969	12,291	285
Wings, salted	1,173	14,765	343	1,504	18,484	429
Stockfish	7,317	203,796	4,728	5,202	146,323	3,395
Herring on ice	19	140	3	7,224	23,417	543
Other fish on ice	23,835	139,415	3,234	22,960	121,199	2,812
Herring, frozen	15,098	90,264	2,094	26,159	144,498	3,352
Other frozen fish, whole	2,654	26,817	622	2,265	24,133	560
Frozen fish fillets	44,359	888,421	20,611	41,535	767,720	17,811
Shrimp and lobster, frozen	960	87,477	2,029	438	44,495	1,032
Roes, frozen	1,389	23,775	552	788	13,227	307
Canned fish	204	11,203	260	174	9,036	210
Cod-liver oil	8,714	80,331	1,864	7,175	52,337	1,214
Lumpfish roes, salted	419	10,606	246	324	5,322	123
Other roes for food, salted	2,644	39,515	917	3,176	44,919	1,042
Roes for bait, salted	2,422	20,161	468	1,745	12,571	292
Herring, salted	24,530	264,743	6,142	29,098	295,780	6,862
Herring oil	29,605	231,194	5,364	29,981	139,055	3,226
Ocean perch oil	28	188	4	754	5,130	119
Whale oil	2,812	23,944	556	3,298	23,093	536
Fish meal	25,135	156,172	3,623	11,535	64,317	1,492
Herring meal	65,037	386,693	8,971	44,608	266,186	6,176
Ocean perch meal	1,599	9,354	217	2,953	13,754	319
Wastes of fish, frozen	5,038	15,732	365	4,452	12,426	288
Liver meal	457	3,023	70	371	2,563	59
Lobster and shrimp meal	129	475	11	72	193	4
Whale meal	1,211	6,694	155	100	558	13
Whale meat, frozen	1,809	14,395	334	1,967	13,564	315

Note: Values converted at rate of 1 krona equal 2.32 U. S. cents.

Iceland (Contd.):

meal, and herring meal as compared with the same period in 1963, according to the Icelandic periodical Statistical Bulletin, November 1964. Exports of herring on ice, frozen herring, salted herring, and ocean perch meal showed a considerable decrease in the first 9 months of 1964.

* * * * *

FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-JULY 1964:

Species	January-July	
	1964	1963
	. . . (Metric Tons) . . .	
Cod	253,919	203,157
Haddock	30,431	30,007
Saithe	16,488	8,270
Ling	3,335	4,149
Wolffish (catfish)	7,387	11,921
Cusk	2,766	4,826
Ocean perch	16,227	19,648
Halibut	644	695
Herring	289,033	196,026
Shrimp	202	349
Capelin	8,640	1,077
Lobster	2,156	3,068
Other	5,301	4,469
Total	636,529	487,662

Note: Except for herring which are landed round, all fish are drawn weight.

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UTILIZATION OF FISHERY LANDINGS, JANUARY-JULY 1964:

How Utilized	January-July	
	1964	1963
	. . . (Metric Tons) . . .	
Herring[1/] for:		
Oil and meal	263,707	126,696
Freezing	12,573	20,605
Salting	21,300	43,982
Fresh on ice	-	5,617
Groundfish[2/] for:		
Fresh on ice	21,019	19,139
Freezing and filleting	141,618	125,304
Salting	82,984	65,793
Stockfish (dried unsalted)	79,915	65,971
Canning	117	237
Oil and meal	2,547	2,290
Crustacea for:		
On ice	-	2
Freezing	2,322	3,334
Canning	36	82
Home consumption	8,391	8,610
Total production	636,529	487,662

1/Whole fish.
2/Drawn fish.

Indonesia

JAPANESE-INDONESIAN SHRIMP FISHING VENTURE:

An Indonesian company in Djakarta has signed an agreement with the Wakayama Prefecture Fishing Company of Japan for a fishing venture off Indonesia, according to the Indonesian periodical Antara. Under the agreement the Japanese firm will provide a first installment of credit amounting to US$1.5 million to purchase vessels and equipment. The equipment is scheduled to start arriving in Indonesia in January 1965 and production is to be under way by mid-1965. After production gets started, 20 metric tons of shrimp a month are to be exported to Japan to repay the loan. (United States Embassy, Djakarta, November 27, 1964.)

Japan

EXPORT VALIDATIONS OF FROZEN TUNA AND TUNA LOINS TO UNITED STATES, JANUARY-OCTOBER 1964:

Japan's export validations of frozen tuna and cooked frozen tuna loins to the United States in October 1964 totaled 7,728 short tons, of which 57.2 percent was albacore, 35.3 percent yellowfin tuna, 0.1 percent bigeyed tuna, 0.8 percent skipjack and 6.6 percent tuna loins.

During January-October 1964, export approvals amounted to 96,757 short tons, an increase of 31,270 short tons (47.7 percent) from the 65,487 short tons exported during the comparable period in 1963. On a species basis, albacore exports were up 62.6 percent, yellowfin 40.5 percent, skipjack 22.6 percent, tuna loins were up 17.2 percent. Big-eyed exports were down 3.2 percent. One short ton of bluefin tuna was exported compared with 374 short tons shipped during the comparable period in 1963.

In January-October 1964, direct shipments accounted for 57.4 percent of the total tuna exports to the United States and transshipments accounted for 42.6 percent. In the comparable period of 1963, total exports were about equally divided between direct shipments and transshipments.

Frozen tuna approved for export during the period January-October 1964 exceeds the

Japan (Contd.):

Japan's Export Validations of Frozen Tuna and Tuna Loins to U. S., Oct. 1964 and Jan.-Oct. 1963-1964

Species	October 1964			January-October 1964			January-October 1963			Total 1963
	Direct	Trans-shipped	Total	Direct	Trans-shipped	Total	Direct	Trans-shipped	Total	
	(Short Tons)									
Albacore, round	1,945	2,473	4,418	23,004	28,621	51,625	10,490	21,268	31,758	36,737
Yellowfin:										
Round	-	317	317	-	1,405	1,405	-	781	781	-
Gilled and gutted:										
20/100 lbs.	1,638	282	1,920	24,204	3,541	27,745	15,750	3,853	19,603	-
100 lbs. up	111	-	111	2,347	-	2,347	890	-	890	-
Dressed with tail	3	380	383	78	4,351	4,429	-	3,926	3,926	-
Fillets	-	-	-	33	12	45	294	104	398	-
Total yellowfin	1,752	979	2,731	26,662	9,309	35,971	16,934	8,664	25,598	33,370
Big-eyed:										
Gilled and gutted	-	5	5	30	35	65	24	4	28	-
Dressed with tail	-	4	4	-	201	201	-	240	240	-
Fillets	-	-	-	37	3	40	6	42	48	-
Total big-eyed	-	9	9	67	239	306	30	286	316	316
Bluefin, fillets	-	-	-	-	1	1	-	374	374	374
Skipjack, round	-	60	60	8	3,029	3,037	70	2,407	2,477	3,762
Loins:										
Albacore	310	-	310	2,746	-	2,746	2,130	-	2,130	-
Yellowfin	200	-	200	3,071	-	3,071	2,677	-	2,677	-
Bluefin	-	-	-	-	-	-	157	-	157	-
Total loins	510	-	510	5,817	-	5,817	4,964	-	4,964	6,183
Grand Total	4,207	3,521	7,728	55,558	41,199	96,757	32,488	32,999	65,487	80,742

Source: Japan Frozen Food Exporters Association.

total amount of tuna exported during the entire year in 1963 by 16,015 short tons. (Fisheries Attache, United States Embassy, Tokyo, December 1, 1964.)

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APPROVED EXPORTS OF FRESH AND FROZEN TUNA:

The quantity of fresh and frozen tuna approved for export for the 7-month period April-October 1964 totaled about 102,000 metric tons, according to data compiled by the Japan Frozen Foods Exporters Association. The 1964 exports approved by the Association exceed comparable 1963 exports by some 25 percent. (Suisan Tsushin, November 26, 1964.)

Japanese Exports of Fresh and Frozen Tuna, April-October 1964

Item	Exports to:		
	U. S.	Overseas Bases[1]	Other[2]
	(Short Tons)		Metric Tons
Albacore (round)	38,876	4,272	4,214
Skipjack (round)	26,305	1,484	13,759
Yellowfin[3]	303	564	5,848
Big-eyed[3]	1,991	19	101
Bluefin[3]	-	-	7,811
Loin[4]	4,449	-	-
Total April-Oct 1964	71,924	6,339	31,733
April-Oct. 1963	39,229	11,474	35,885

1/Primarily to American Samoa and Penang, Malaysia.
2/Europe, Africa, and Australia.
3/Actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.
4/Includes mixture of different tuna species.

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PRICES DROP FOR ATLANTIC FROZEN ALBACORE TUNA IN DECEMBER 1964:

The sharp price drop in December 1964 for frozen Japanese albacore tuna on the United States market, brought about by unusually good Japanese fishing in the tropical Atlantic Ocean and by lack of buying interest among U. S. packers, created an excess supply of 3,000-4,000 tons of Japanese frozen Atlantic albacore. According to reports in December 1964, one major U. S. tuna packing firm had not bought any Japanese tuna since the fall of 1964.

Reportedly, some frozen Atlantic albacore tuna sold in early December 1964 for as low as US$325 a short ton, c.&f. Puerto Rico.

Japan (Contd.):

The ex-vessel price for albacore tuna in Japan in December 1964 was 115 yen a kilogram ($290 a short ton). (Suisan Tsushin, December 4, 1964, and other sources.)

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COST OF SHIPPING INDIAN OCEAN FROZEN TUNA TO PUERTO RICO:

The cost of shipping to Puerto Rico Japanese-caught Indian Ocean frozen tuna from the transshipment ports of Port Louis, Mauritius Island, and Durban, South Africa, was estimated to be US$70-80 a short ton in November 1964. Japan is mainly transshipping frozen albacore to the United States canneries in Puerto Rico at $355-360 a short ton c.i.f., or at the same price as that for albacore of Atlantic origin. To reduce shipping costs, the Japanese firms operating the two tuna bases are jointly using the same carrier vessels. (Suisan Tsushin, November 13, 1964.)

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NEW TUNA PURSE-SEINE OPERATION OFF AFRICA OBSERVED BY FISHING COMPANY OFFICIALS:

Two officials of a leading Japanese fishing company arrived in West Africa early in December 1964 to study their company's new purse-seine operation. They were scheduled to spend about 2 weeks at sea observing the 2-vessel seining of the Kuroshio Maru Nos. 81 and 82. Plans called for those vessels to work together in setting a purse-seine net 2,000 meters (6,560 feet) long and 200 meters (656 feet) deep. The Japanese believe the use of two vessels to set the net on a school of tuna will speed the surrounding operation. The two vessels also jointly purse the net. The two Japanese seiners are supported by the mothership Chichibu Maru No. 2. Yellowfin and skipjack tuna are the objectives of the purse-seine fleet off Africa.

(Editor's Note: Japanese newspaper reports have indicated that the Kuroshio Maru Nos. 81 and 82 are equipped with a newly patented net hauler. Called the "side hauler," this gear consists of a number of rubber "balls" mounted at 2-meter intervals on a hydraulically-operated rotating shaft located on the side of the vessel. During net hauling, the "balls" on the rotating shaft cause the net to fold between them, thus facilitating hauling. The "side hauler" is reported to greatly reduce the manpower needed for net handling.)

If the two-vessel purse-seine operation proves successful off West Africa, it may result in major changes in the fishing gear and methods used by one of Japan's leading fishing companies.

While in Africa, the Japanese company officials observed tuna shipping activities in Freetown, Sierra Leone; Monrovia, Liberia; and Accra, Ghana.

Another purpose of the Japanese officials' visit to Africa was to work out plans for a live-bait supply operation that could save the tuna live-bait fleet valuable time. Plans were reported for a local bait fishery to supply shore-based storage facilities with a continuous supply of live bait. If successful, such a service is expected to save tuna vessels fishing with bait about 36 hours each trip. (Fisheries Attache, United States Embassy, Abidjan, December 8, 1964.)

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TUNA PURSE-SEINE FLEET REPORTS POOR FISHING OFF WEST AFRICA:

The Japanese Chichibu Maru No. 2 (1,639 gross tons) purse-seine fleet, accompanied by the new seiners Kuroshio Maru Nos. 81 & 82 (each of 145 gross tons) as of early December 1964 reported poor fishing. As of early December, landings totaled 200 metric tons, mainly skipjack tuna. The fleet commenced fishing November 17. (Shin Suisan Shimbun Sokuho, December 9, 1964.)

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FLEET FISHING TUNA IN GULF OF GUINEA:

A Japanese fishing company's five-vessel purse-seine fleet (led by the 1,600-ton mothership Chichibu Maru No. 2) commenced fishing in the Gulf of Guinea on November 7, 1964. On the first day the fleet caught about 7 metric tons of tuna; on the second day 25 tons (mainly skipjack). Subsequently, the fleet caught 3-4 tons a day.

The Chichibu Maru fleet (scheduled to operate in the Atlantic Ocean for two years) is experimenting with a mechanical net hauler called the "side hauler." High expectations are held for that device. (Suisan Tsushin, November 26, 1964.)

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Japan (Contd.):

TUNA MOTHERSHIP FLEET FROM SOUTH PACIFIC LANDS:

A large Japanese fishing company's tuna mothership fleet, led by the mothership Shinyo Maru (3,800 gross tons), landed in Japan with 1,244 metric tons of tuna, spearfish, and shark, on November 18, 1964. The tuna catch was 206 tons of yellowfin, 506 tons of albacore, and 102 tons of other tuna species. The catcher vessels averaged 1.9 tons of fish a day. The fleet was last reported operating the Fiji Island waters at latitude 18° 43' S. and longitude 172° 54' E. (Suisancho Nippo, November 21, 1964.)

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TUNA MOTHERSHIP OPERATIONS IN SOUTH PACIFIC SHOW LOSSES:

The large Japanese fishing company which operated the Yuyo Maru (5,500 gross tons) tuna mothership fleet in the South Pacific off the Fiji Islands in the summer of 1964 reported a loss of about 8 million yen (US$22,222) for that operation. The loss was attributed to the failure of some of the accompanying large catcher vessels (180-220 gross tons) to deliver all their catches to the mothership, with the result that the fleet catch target could not be met. In view of the loss, the Japanese firm (which in December 1964 was conducting winter operations with the tuna mothership Shinyo Maru, 3,800 gross tons) may reduce its mothership operations to 1 fleet in 1965. In 1963 that firm was reported to have lost 150 million yen ($416,667) in its tuna mothership operation.

Another large Japanese firm which also operated a tuna mothership (Nojima Maru, 8,800 gross tons) fleet in the South Pacific in the summer of 1964, is reported to have lost 150 million yen ($416,667) in 1964 and 70 million yen ($194,444) in 1963. Reportedly, that firm may not conduct mothership-type operations in the South Pacific in 1965. (Suisancho Nippo, December 11, 1964.)

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TUNA FISHING TRENDS IN ATLANTIC OCEAN:

The Japanese tuna long-line fleet in the Atlantic Ocean as of early December 1964 continued to catch large quantities of albacore tuna. This resulted in driving down albacore export prices. Reportedly, some albacore sold for as low as US$325 a short ton c.& f. Puerto Rico (the check-price level). Informed sources claim that the excessive competition between Japanese exporting firms has not helped the situation, and has contributed to the price decline.

The ex-vessel price for albacore in Japan was about 115 yen a kilogram (US$290 a short ton). (Suisan Tsushin, December 2 & 4, 1964.)

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TUNA RESOURCES IN ATLANTIC TO BE SURVEYED:

The 500-ton guidance vessel Iwaki Maru of the Fukushima Prefectural Fisheries Research Laboratory was to have departed Onahama on December 5, 1964, for the Atlantic Ocean. The Iwaki Maru, at the request of the Food and Agriculture Organization (FAO), is cooperating in the Atlantic tropical tuna survey and will remain at sea for 18 months. Tuna caught by that vessel will be handled for sale by a Japanese trading firm. (Suisancho Nippo, December 3, 1964.)

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TUNA FLEET IN TROPICAL ATLANTIC:

About 140 Japanese tuna vessels were reported to be operating in the tropical Atlantic Ocean, as of early December 1964. The combined carrying capacity of the 140 vessels totaled about 48,000 tons.

The carrying capacity of the 82 vessels operated by the 5 large Japanese fishing companies and their affiliated firms totaled over 35,000 tons or over 70 percent of the combined capacity of the entire Japanese tuna fleet in the tropical Atlantic. (Suisan Tsushin, December 12, 1964.)

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POOR SAURY SEASON CREATES TUNA BAIT SHORTAGE:

The 1964 saury fishing season in Japan as of early December 1964 was extremely poor and the light landings forced ex-vessel prices up to a high of over 100 yen a kilogram (US$252 a short ton) at Choshi, Chiba Prefecture (east of Tokyo), and to 60-80 yen a kilogram ($151-202 a short ton) in the Sanriku region (northeastern Japan).

Saury are used extensively as bait in the tuna long-line fisheries and the poor saury

Japan (Contd.):

season threatens to create a severe shortage for bait in 1965. Yearly consumption of saury as tuna bait totals an estimated 40,000-60,000 metric tons, but the saury bait supply, as of early December, was estimated at only 25,000 metric tons, thus leaving a forecasted shortage, as of early December, of at least 15,000 tons.

The Japanese pack of canned saury, as measured by consignments made to the Canned Saury Sales Company as of December 8, 1964, was reported at 500,400 actual cases. Owing to poor fishing conditions, difficulty of procuring supply, and the high prices for the raw product, the saury packers were expected to end packing operations for the 1964 season early in December. (Suisan Tsushin and Suisancho Nippo, December 10, 1964.)

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REFUELING OF TUNA VESSELS AT SEA:

The 1,983-ton tanker Tofuku Maru, chartered by the Japan National Federation of Tuna Fishermen's Associations to refuel the Federation's tuna vessels operating in the eastern Pacific, was scheduled to return to Yokohama in late November 1964 after a 195-day trip. The tanker refueled at sea a total of 119 vessels and contributed substantially to the improvement of their operations and earnings since those vessels, as a result of not having to run into port to refuel, were able to spend that many more days fishing. (Minato Shimbun, November 19, 1964.)

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TUNA VESSEL DESIGN IMPROVEMENT STUDIES:

To reduce manpower requirements in the tuna fishery, the Japanese Fisheries Agency may start a vessel design study. The Agency is reviewing a plan to construct and test a model tuna vessel for operation in the distant-water tuna fishery, where the need for vessel improvement is most critical. Construction of the model vessel is expected to be undertaken sometime after 1966. In the meanwhile, the Agency hopes to establish a research group, to be formed by Government and industry scientists, fishing experts, and shipbuilding and equipment engineers, to study and develop recommendations. (Suisan Tsushin, December 14, 1964.)

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EXPORTS OF CANNED TUNA TO UNITED STATES SUSPENDED:

The Japanese Ministry of International Trade and Industry (MITI) on December 1, 1964, suspended all canned tuna exports to the United States. The reason is that despite the expiration on November 20, 1964, of the agreement for business year 1964 (concluded among the export traders concerned on the basis of the Export-Import Transactions Law), a new agreement for business year 1965 (begins December 1) has not been concluded among those traders because of the conflict between the traders and canners. Attaching importance to this situation, MITI and the Japanese Fisheries Agency are making efforts to mediate between the two groups.

At present, 18 trading companies are exporting canned tuna to the United States at a fixed quota allotted under the agreement concluded among those companies. The canners involved, however, have strongly asked for a revision of the agreement since the spring of 1964. But the trading circles concerned tried to maintain the existing agreement by rejecting the canners' request. The assertions of the two groups have followed parallel lines and the agreement has finally expired. The result is that no agreement was concluded since December 1, 1964. MITI, therefore, has adopted measures not to approve exports until conclusion of a new agreement because of apprehension that it might adversely affect the pattern of exports. Some quarters fear that if this situation continues it may seriously affect exports for the new business year.

The canners are strongly opposed to the agreement concluded among the trading companies because the amount of exports for 1964 was 2,204,000 cases (48 No.2 or 7-oz. cans/cs.) which was below the level of 2,270,000 cases for 1963 and the level of 2,300,000 cases for the year before that. The canners also believe that under the selling methods based on the agreement there is a gap between the quota and the trading companies' selling capacity and that this is the greatest cause for the deterioration of the export pattern.

The trading circles concerned, however, attribute the export decline for 1964 to the fact that in 1963 stocks were carried over to 1964 due to the canned tuna botulism incident in 1963 and that production in the United States has increased. Those circles emphasize that it is not true that the responsibility for the situation lies in the agreement, as the canners concerned say it does. Under such circumstances, MITI and the Fisheries Agency are strongly asking the two sides to settle the problem through immediate negotiations. MITI also plans not to approve exports until a new agreement is concluded. (Nihon Kogyo, December 3, 1964.)

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PACKERS AND EXPORTERS FAIL TO MAKE CANNED TUNA EXPORT AGREEMENT:

As a result of the failure of Japanese tuna packers and exporters to settle a new export agreement covering the export of canned tuna to the United States for the business year December 1964-November 1965, the Japanese Ministry of International Trade and Industry (MITI) provisionally extended the old agreement which expired November 31, 1964. Some members of the Japan Packers Association (formerly shared the minority view but have managed to gain adherents to their views to a point where they have a powerful voice in the Association) feel that the old export agree-

Japan (Contd.):

ment should be completely revised so as to cope with declining canned tuna exports to the United States.

At the request of the Fisheries Agency, the Packers Association was to hold an executive meeting on December 9, 1964, to consolidate the views of the group. The views held by the Association and those held by the exporters are said to be irreconcilable. It is reported that in the end the Fisheries Agency (which is said to lean toward the packers' viewpoint) and MITI (which shares the views of the exporters) may have to get together in an attempt to reach settlement on a new agreement. (Suisan Tsushin, December 5, 1964, and other sources.)

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FUNDS BUDGETED FOR CANNED TUNA PROMOTION IN UNITED STATES:

The International Tunafish Association of Japan has budgeted 48,501,000 yen (US$134,725) for promoting the sale of canned tuna in the United States. Half of that sum is to be subsidized by the Japanese Government.

The sum of 24,250,680 yen ($67,363) is to be used for public relations aimed at promoting the demand for canned tuna in the United States through a national program directed at the American family. In addition, efforts will also be directed toward increasing use of tuna in the hotel and restaurant trade and at government facilities. This phase of the program is directed by a United States public relations firm to promote tuna packed by United States packers who are the customers of the Japanese export frozen tuna industry.

The sum of 23,250,320 yen ($67,362) is to be spent on 10- and 20-second television spots promoting Japanese canned tuna in brine. The spots are to be televised in the New England and New York areas for two months (February 1-March 30, 1965). That part of the promotion is being handled by a New England advertising agency. (Suisan Tsushin, December 3, 1964, and other sources.)

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CANNED TUNA MARKET SURVEY CONDUCTED IN U. S. CITIES:

A canned tuna market survey of the Boston (Mass.) and New York areas made by the Japan External Trade Organization (JETRO) reveals that October 1964 sales of brand-name Japanese products were steady but those of lesser known brands were poor. Except for one case where solid white tuna in brine (7 oz. 48's) sold at a promotional discount of US$0.20 a case, all Japanese brands were being sold at list price. Sales in October were reported at the same level as in September. (Suisan Tsushin, December 2, 1964.)

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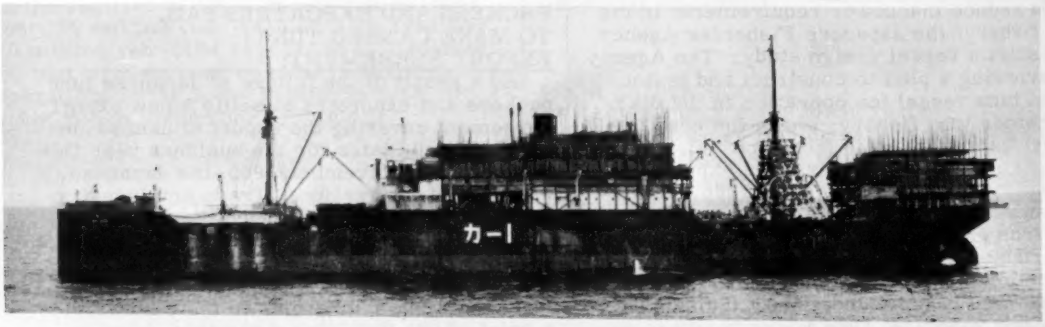
KING CRAB TRAP FISHING PLANNED IN BRISTOL BAY:

The Japanese Fisheries Agency has decided to license trap fishing for king crab in 1965 in the waters set aside specifically for trap fishing in Bristol Bay. That decision follows the United States-Japan king crab fishery agreement to establish an area off Alaska especially for crab fishing by traps and to



Japanese king crab factoryship Tokei Maru.

Japan (Contd.):

prohibit the use of any other crab fishing method in that specific area.

The 9 Japanese fishing companies which jointly operate the Dainichi Maru (5,858 gross tons) and Tokei Maru (5,385 gross tons) king crab factoryship fleets in Bristol Bay are reported to have agreed to a Fisheries Agency recommendation that they employ crab-pot gear in 1965. Each of the 2 fleets are expected to employ 1 crab-pot fishing vessel in 1965. (Shin Suisan Shimbun Sokuho, December 11, 1964; Nihon Kogyo, December 14, 1964.)

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POTS MAY BE USED TO FISH KING CRAB IN BRISTOL BAY IN 1965:

The Japanese fishing companies which operate the king crab factoryships Tokei Maru (5,385 gross tons) and the Dainichi Maru (5,858 gross tons) are planning to fish with crab pots in Bristol Bay in 1965. Reportedly, the use of crab pots will add to their operational cost, but they are expected to follow the recommendation of the Fisheries Agency to experiment with pot fishing in Bristol Bay. Although plans have not been completed, each of the two fleets is expected to operate one crab-pot fishing vessel in 1965. (Shin Suisan Shimbun Sokuho, December 4, 1964.)

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JAPANESE FEEL SOVIETS MAY START MOTHERSHIP-TYPE SALMON FISHERY IN NORTH PACIFIC:

According to unofficial Japanese sources, some elements within the Soviet fisheries structure are hopeful of developing a high seas salmon fishery in the North Pacific off the Soviet coast. In June 1964 the Soviet Union was reported as having conducted experimental high-seas salmon operations, employing a mothership. Details concerning that vessel's operations have not been divulged. The Japanese fishery delegation which visited the Soviet Union this year (1964) is said to have explored this matter but received no response from the Soviet Union. However, Japanese sources believe the operation was not very successful.

According to those sources, the Soviet Union attributes the decline in Asian salmon runs to the effect of the Japanese high-seas fishery. As a result of declining runs, the Soviet Union reportedly has had to gradually reduce the scope of her shore-based fishing operations, even to the extent of causing the closure of some facilities, and some Russian circles are now said to be strongly pushing for the development of a high-seas salmon fishery. Reportedly, many within the Soviet Government fisheries structure oppose such a plan. However, the Soviet Union has the technical knowledge and fishing vessels to enable her to conduct a high-seas fishery for salmon, if she so wishes.

The Japanese sources believe that the Soviet Union will likely not undertake to develop immediately a high-seas salmon fishery like that of Japan, but may begin by conducting mothership-type operations off the Soviet coast between Olyutorski and Cape Anadyr to exploit the chum and pink salmon resources of those regions. (Suisan Keizai Shimbun, November 29, 1964.)

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LICENSING OF VESSELS FOR NORTHEASTERN PACIFIC TRAWL FISHERY TO BE STUDIED:

The Japanese Fisheries Agency, which was expected to announce in January 1965 vessel licensing regulations for the northeastern Pacific trawl fishery, was requested to study the situation carefully before licensing additional trawlers in 1965. The request was made not in complete opposition to an increase in vessels to be licensed in 1965. The reasons for that point of view were: (1) an increase in vessels over the 1964 fleet of 6 trawlers would further disrupt the market for rockfish (main species taken in that fishery), the prices for which declined drastically in 1964; (2) high-priced fish, such as sablefish, are not abundant and shrimp can only be fished in confined areas; and (3) good trawling grounds are limited and spotty. It is believed vessels licensed for that fishery would find it difficult to operate on a profitable basis, as indicated during the 1964 season which was barely satisfactory. Therefore, if the Agency should plan on licensing additional trawlers for operation in the northeastern Pacific in 1965, then the increase should not be large.

The Fisheries Agency was studying plans on licensing a total of less than 10 trawlers in the northeastern Pacific in 1965. (Suisan-cho Nippo, December 7, 1964.)

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Japan (Contd.):

TRAWLERS LICENSED FOR NORTHEASTERN PACIFIC IN 1965:

The Japanese Fisheries Agency is planning on authorizing the operation in the northeastern Pacific in 1965 of not more than 2 or 3 trawlers in addition to the 6 vessels licensed in 1964. The Agency is also expected to remove the seasonal restriction placed on that fishery and to permit year-round operation. Further, the trawlers engaged in that fishery will be permitted on a gradual basis to fish with 1 or 2 smaller vessels. (Suisan Tsushin, November 30, 1964.)

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BOTTOMFISH MOTHERSHIP ASSOCIATION SUBMITS RECOMMENDATIONS ON NORTH PACIFIC-BERING SEA FISHERY:

The Japan Northern Waters Bottomfish Mothership Association, on December 7, 1964, presented the following recommendations to the Japanese Fisheries Agency for the 1965 bottomfish fishery in the Bering Sea and the North Pacific:

1. The Government should not permit an increase in fishing effort in the Bering Sea beyond the 1964 scale of operations. Despite the reduction in mothership-type operations enforced by the Association to stabilize the bottomfish fishery, success has not been achieved due to the entry into the Bering Sea fishery of additional independently operating trawlers withdrawn from other fisheries.

2. The valid period for licenses should be extended from the present one year to two years or more, and the Government should take appropriate action to cope with any changes in fleet composition during the effective period of the licenses.

3. The North Pacific waters south of the Aleutian Islands west of 165° W. longitude should be combined with the eastern Bering Sea as an operational area for the mothership-type bottomfish fishery. Inclusion of the waters south of the Aleutians west of 165° W. longitude, where four trawl fleets fished experimentally in 1964, would permit wider distribution of fishing effort and thus contribute to the conservation of resources of the Bering Sea.

4. Operational order should be firmly established for the northern waters bottomfish fishery. Independently operating trawlers diverted from other fisheries and licensed to operate in the western and central Bering Sea have, in some instances, extended their operations beyond their licensed area. These violations unfortunately have served to invite the distrust of foreign fishermen.

5. The Gulf of Alaska fishery, presently regulated as an experimental fishery, should be established as a regular licensed fishery in 1965. Fleet operations should be maintained at the 1964 level due to the limited grounds where commercial fishing is possible and since these grounds are being developed.

6. The eastern limit of the operational area for the Gulf of Alaska fishery should be expanded from the present line at 135° W. longitude to the waters off Vancouver. In addition to Japan, the Soviet Union is operating a huge fleet in the Gulf of Alaska. Canada is also reported to be getting ready to fish bottomfish in the Gulf. It would be desirable that the operational areas be expanded to permit Japan to expand her operations into those international waters and to develop a fishery by exploring and using the unexploited resources.

7. The number of trawlers to be authorized for operation in the Gulf of Alaska should be held at the same level as in 1964. However, in licensing additional vessels, preference should be given to firms engaged in the mothership-type bottomfish fishery.

8. Transfer of catch at sea should be permitted. (Suisan Tsushin, December 8, 1964.)

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BERING SEA FISHERY OPERATIONS, DECEMBER 1964:

The Japanese Chichibu Maru (7,420 gross tons) fleet ended its second half year of shrimp fishery operations in the eastern Bering Sea on December 10, 1964, and was to have returned to Hakodate on December 15. The Chichibu Maru's production totaled about 60,000 cases (48 $\frac{1}{4}$-lb. cans) of shrimp and 5,500 metric tons of frozen fish (consisting of rockfish 1,600 tons, yellowfin sole 1,200 tons, black cod 800 tons, herring 700 tons, and heads-off shrimp 50 tons). The Chichibu Maru's operation ended with a deficit in 1964 since the mothership was unable to meet her production target, reportedly due to loss of fishing time resulting from bad weather in

Japan (Contd.):

October and November. Additional fishing time was lost when that vessel was diverted to Prince William Sound in late summer to pick up fresh salmon purchased from Alaskan fishermen.

The same firm's trawler Akebono Maru No. 71 (3,500 gross tons) concluded her first phase of operations in the eastern Bering Sea and was scheduled to return to Kurihama, Japan, on December 14, 1964. The Akebono Maru's production totaled 1,888 metric tons of bottomfish (1,600 tons of rockfish, 200 tons of black cod, and 88 tons of miscellaneous species). After unloading her catch, the Akebono Maru was scheduled to depart for the Bering Sea again.

Three other 3,500-ton Japanese trawlers (Akebono Maru No. 72, Aso Maru, and Taiyo Maru No. 82) as of mid-December 1964 were still operating in the eastern Bering Sea and were scheduled to continue operations until January or February 1965. (Suisan Tsushin, December 12, 1964.)

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TRAWL OPERATIONS IN NORTHWEST ATLANTIC:

The 3,700-ton Japanese stern trawler Tenyo Maru, which operated in the Northwest Atlantic Ocean on an experimental basis for approximately one year, was scheduled to return to Japan in mid-December 1964. The fishing company which operates that trawler is undertaking a study to determine whether or not to send a vessel to the Northwest Atlantic in 1965.

The Tenyo Maru landed 15,000 metric tons of fish (mainly cod), or 62 percent of her production target. Reasons ascribed to the poor catch were: (1) rough seas and the unsuitability of the vessel for operation in the North Atlantic; (2) severe competition on the fishing grounds; (3) poor cod season in general. (Suisan Keizai Shimbun, November 14, 1964.)

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NEW STERN TRAWLER SCHEDULED TO FISH IN ATLANTIC OCEAN:

The 3,500-ton Japanese stern trawler Kirishima Maru was delivered to her new owners on November 30, 1964. The trawler was built at a shipyard in Okayama Prefecture and will be dispatched to the Atlantic Ocean following a shakedown cruise. (Suisan-cho Nippo, December 1, 1964.)

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LARGE TRAWLER DEPARTS FOR ATLANTIC:

The 1,500-ton Japanese stern trawler Daishin Maru No. 15 was scheduled to depart Osaka on November 28 1964, for the trawling grounds off west Africa. The Daishin Maru operated in the Gulf of Alaska in the summer of 1964. (Suisan Tsushin, November 21, 1964.)

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CANNED SALMON EXPORTS DOWN IN 1964:

The value of Japan's export of canned salmon in 1964 was expected to drop to the lowest level in the past seven years, mainly due to poor catches, according to the Japan Canned Salmon Sales Company. Exports for 1964 were expected to total about 2,020,000 cases (48 ½-lb. cans) or about 110,000 cases less than in 1963. Red salmon were expected to account for 850,000 cases (1.1 million cases in 1963); silver 400,000 cases (300,000 cases); pink 600,000 cases (same as 1963); and chum salmon 170,000 cases (130,000 cases). (The Japan Economic Journal, November 10, 1964.)

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SALTED SALMON, AND HERRING AND SALMON ROE PRICES:

Herring roe, a traditional New Year's food in Japan, in mid-November 1964 was sold to Japanese wholesalers at prices ranging from 6,000 yen a kilogram (US$7.57 a lb.) for extra large, 3,800 yen a kilogram ($4.79 a lb.) for medium, and 2,000 yen a kilogram ($2.52 a lb.) for small. Prices were for roe of Hokkaido origin. The product was said to be beyond the reach of ordinary consumers and virtually all of it was being purchased by business firms for use as year-end gifts or by high-class restaurants. Domestic roe products being in very short supply in Japan, 120 metric tons of herring roe were imported from the Soviet Union. Of that quantity 70 tons as of mid-November 1964 had been sold and only 40 tons were expected to be available for the year-end trade. The Soviet product (medium and large roe) was selling at 3,000-4,000 yen a kilogram ($3.79-5.05 a lb.)

Other fishery products which generate tremendous demand in Japan as year-end gifts

Japan (Contd.):

are salmon roe and lightly salted salmon. Japanese domestic salmon roe was selling for 2,000-2,500 yen a kilogram ($2.52-3.15 a lb.) for high-quality and 1,700-1,800 yen a kilogram ($2.14-2.27 a lb.) for medium roe. However, much of the salmon roe in supply was imported from the Soviet Union, which was sold at 1,600-1,700 yen a kilogram ($2.02-2.14 a lb.).

Lightly salted salmon (species not designated but believed to be chum salmon) was quoted at 440-470 yen a kilogram ($0.56-0.59 a lb.), 10 percent above the price in 1963. (Hokkai Suisan, November 23; Suisan Keizai Shimbun, November 20, 1964.)

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DELEGATION NEGOTIATES PURCHASE OF SOVIET HERRING:

A seven-man Japanese delegation was scheduled to leave for Moscow on December 10, 1964, to negotiate the purchase of Soviet herring. The delegation hoped to negotiate a three-year contract calling for the delivery of 4,000 metric tons of (frozen) herring in 1965; 5,000 tons in 1966; and 6,000 tons in 1967. In 1964, Japan contracted for the delivery of 3,000 tons of herring. (Suisancho Nippo, December 3, 1964.)

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HERRING ROE PRICES:

Herring roe, a traditional Japanese New Year's food referred to in Japan as the "yellow diamond," reportedly were sold in mid-December 1964 for a new high on the Tokyo wholesale market at the fantastic price of 17,000 yen a kilogram (US$21.43 a pound) for the top-quality dried product. That price exceeds the 1963 year-end high price of 16,500 yen a kilogram ($20.80). Lower grade salted herring roe imported from the Soviet Union reportedly are being sold at around 5,000 yen a kilogram ($6.30 a pound) as compared with 3,500 yen a kilogram ($4.41 a pound) in 1963. (Suisan Keizai Shimbun, December 11, 1964, and other sources.)

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SHRIMP IMPORTS, JANUARY-AUGUST 1964:

Japanese shrimp imports for January-August 1964 totaled 12,299 metric tons on a customs clearance basis. This was an increase of about 4,500 metric tons, or over 50 percent, above the January-August 1963 imports of 7,737 tons, and also surpasses the overall 1963 imports of 11,533 tons.

Imports from Communist China totaled 4,289 metric tons as compared to total 1963 imports from that country of 2,663 metric tons. Imports of Mexican shrimp (transshipped from U.S.) totaled 3,897 metric tons, or 762 metric tons more than total 1963 imports. (Suisan Tsushin, October 21, 1964.)

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KOREAN FISHERY PRODUCTS TO BE IMPORTED:

The Japanese Government announced on December 1, 1964, that it was permitting on a special basis the importation of US$2 million worth of South Korean fishery products. Products to be imported are squid ($1 million), yellowtail ($700,000), and sea bream ($100,000). Allocation of the remaining sum ($200,000) is to be determined after examination of domestic market developments. The first shipment of fish was expected to arrive in Japan about mid-December.

The reasons given for the Japanese Government's action are stated to be: (1) strong request made by South Korean Government; (2) shortage of squid, yellowtail, and sea bream in Japan; (3) stabilization of prices for those products in short supply. Political considerations (e.g., improved foreign relations climate, release of Japanese fishing vessels and crews by Korean Government) are said to have played some part in the Government's decision. (Suisan Tsushin, December 2, 1964.)

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SHORTAGE IN OKINAWAN LABOR FORCE FOR USE ON JAPANESE FISHING VESSELS:

A survey of the Okinawan labor force conducted in November 1964 by a Japanese official revealed that it may be practically impossible for the Japanese coastal fishery operators to attract young Okinawans to sail on their vessels due to the great shortage of labor in Okinawa. Japanese coastal fishery operators, experiencing great difficulty in attracting young Japanese men into the fishery, had hoped to employ Okinawans and had

Japan (Contd.):

initiated the survey. (Suisan Keizai Shimbun, December 1, 1964.

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NEW STERN TRAWLER LAUNCHED:

The 3,470-ton Japanese stern trawler Takachiho Maru, owned by a large Japanese fishing company, was launched November 17, 1964, at a shipyard in Okayama Prefecture. The trawler was expected to be completed in January 1965. The vessel's specifications are: length 88 meters (289 feet); beam 16 meters (53 feet); gross tonnage 3,470; deadweight tonnage 3,400; speed about 15.5 knots; cold-storage holding capacity 3,500 cubic meters (123,585 cu. ft.); main engine 3,900 brake hp.

Press reports indicated that the trawler would be assigned to the Gulf of Alaska in 1965. (Suisancho Nippo, November 11, 1964, and other sources.)

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BOTTOMFISH RESOURCES IN WATERS OFF AUSTRALIA TO BE SURVEYED:

The Japanese Fisheries Agency is proceeding with plans to explore the bottomfish resources in the waters off Australia. The investigation is expected to begin in 1965. The survey is part of the Agency's plan to promote the development of new fishing grounds to counteract the growing trend where Japan is gradually being squeezed out of existing fishing grounds by various coastal states. Reportedly, the high seas off Australia were selected since they hold promise and other foreign countries are not now engaged in fishing those waters. (Suisancho Nippo, November 19, 1964.)

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FISHERY REPRESENTATIVES TOUR COMMUNIST CHINA:

Three Japanese fishery representatives departed Japan on November 21, 1964, on a one-month tour of Communist China at the invitation of the Chinese Fishery Association. Purpose of the tour was to study: (1) Chinese fishery policy, administrative structure, and training and research programs (particularly program changes subsequent to the Second Five-Year Plan); (2) structure of fishery production organizations, living conditions of fishery workers, and relationship between fishing industry and agriculture; (3) fishing port facilities, distribution, and fish prices; and (4) marine resources conservation programs and Chinese views on international treaties, such as the Conventions on the Law of the Sea and on the Continental Shelf. They were scheduled to visit Hong Kong, Kwangchow, Peking, Shanghai, and Tsingtao.

The Japanese team was Masataka Ide (President, Japan National Fishing Port Association), Shigehisa Matsuda (member of the Japan Marine Products Research Institute), and Makoto Tange (Planning Section, Japanese Fisheries Agency). (Suisan Keizai Shimbun, November 19, 1964.)

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CANNED HAKE MARKETING PROJECT POSTPONED:

The Japanese firm, which had been planning on marketing canned merluza (hake) in Japan beginning in November 1964, was reported to have postponed the sale due to lack of favorable response to the product. Merluza or hake taken in waters off west Africa were packed in oil by the Japanese firm and submitted to a series of taste panels in Japan, as well as exported to Europe on an experimental basis. The product failed to create a favorable reaction reportedly due to the undesirable fish odor present in the pack. (Suisancho Nippo, December 4, 1964.)

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SOVIETS FISHING SAURY OFF NORTHEASTERN JAPAN:

The Soviet fleet fishing for saury off the northeastern coast of Japan was reported in late November 1964 to be operating 20-30 nautical miles off Kinkazan, Miyagi Prefecture. The fleet was said to consist of two 8,000-ton-class motherships and 30 fishing vessels. (Shin Suisan Shimbun Sokuho, November 28, 1964.)

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FIRM BUILDING NEW FREEZER FACTORYSHIP-MOTHERSHIP:

A large Japanese fishing company is constructing a 9,300-gross-ton freezer factoryship-mothership at a shipyard in Yokohama. The mothership, to be called Meisei Maru No. 2, was scheduled to be launched on November 30 1964, and is expected to be opera-

Japan (Contd.):

tional in spring 1965. The Meisei Maru will be used as a salmon mothership during the summer salmon season and for bottomfish fishing in the northern waters (North Pacific, Bering Sea, etc.) during the winter (November through March).

The firm owning the mothership plans to divert the 7,400-ton factoryship Chichibu Maru as a carrier vessel on the Atlantic Ocean run during the winter months. The Chichibu Maru would then replace the Meisei Maru in the spring when the Meisei Maru switches to salmon fishing. (Suisan Tsushin, November 19, 1964.)

日本

Republic of Korea

OFFSHORE FISHING FLEET EXPANDED:

As of November 30, 1964, there were 21 Korean tuna long-line vessels in operation. Those included one 378-ton vessel delivering catches to Port-of-Spain, Trinidad, for a United States firm; two 148-ton vessels delivering to Santos, Brazil, for a British-Japanese firm; and 18 vessels (ranging from 103 to 145 tons) delivering catches to American Samoa for United States firms.

The Korean Government has contributed to the expansion of the Korean fishing fleet by guaranteeing the repayment of certain loans arranged by private Korean firms to finance new fishing vessels. In 1963, the Korean Government approved payment guaranties totaling US$6.2 million for the following groups of vessels.

(1) Nine 145-ton tuna vessels financed by United States companies and intended for fishing in the South Pacific. The vessels were delivered by August 1964 from shipyards in Pusan, Korea.

(2) Ten 135-ton tuna vessels financed by a European company and intended for fishing off western Africa. The vessels were scheduled for delivery in December 1964 by a European company.

A Korean mackerel seiner equipped with a power block for hauling in the seine net.

(3) Eight 135-ton tuna vessels and two 290-ton tuna vessels financed by a United States firm and intended for Indian Ocean fishing. The vessels, which are being built in Japan, had not been delivered as of November 1964.

(4) Eleven 140-ton refrigerated vessels financed by a United States company and intended for fishing in the South Pacific. The vessels, which are being built in Japan, had not been delivered as of November 1964.

Late in 1964, the following additional moves to expand Korea's fishing fleet were reported:

(1) On November 20, 1964, the Korean Government approved, subject to approval of the Japanese Government, a payment guaranty for a loan of $2,735,600 (including $518,258 in interest) from a Japanese firm. The Korean recipient is a Government-run shipyard in Pusan, Korea. Terms call for 5.5 percent annual interest and repayment of the loan in 7 years after a 6-month deferment. The original purpose of the loan was to build 19 tuna vessels aggregating 2,660 tons. However, if interested parties in Japan concur, the Korean interests now propose to build 2 freighters (one of 4,000 tons and one of 2,600 tons) in lieu of the tuna vessels.

(2) On October 29, 1964, representatives of a Korean fishing company and a United States processing firm signed an agreement for a loan of $310,000 for the construction of two 200-ton steel vessels for tuna long-lining. Materials and equipment are to be imported and the vessels are to be constructed in Pusan, Korea, from March to September 1965. In October 1965, the vessels are scheduled to be completed and to sail for fishing grounds near American Samoa where the catch will be delivered to the processing facilities of the United States firm making the loan. The loan terms call for repayment in 5 years at 6-percent interest.

(3) Another Korean fishing company and a United States processor have also negotiated a new agreement whereby the United States company is to make a cash loan of $1,490,000 to enable the Korean firm to purchase materials to build five 200-ton and five 180-ton tuna-fishing vessels at Pusan. The agreement calls for the Korean Government to subsidize part of the vessels' construction cost, but as of late 1964, the Korean Government had not approved the arrangement. It is believed that the United States and Korean interests will go ahead and build the vessels even if the subsidy is not approved. Terms of the loan call for 6 percent annual interest and repayment in 6 years after a grace period of 2 years. The new vessels built with the loan are to fish off Western Africa in the vicinity of Freetown, Sierra Leone.

(4) Possible foreign financing to build three 350-ton tuna vessels has been discussed by still another Korean firm which is seeking Korean Government approval of the project. Prospects for the proposal were not clear late in 1964.

The initial deliveries of vessels under the agreement between the Korean Government and a French-Italian consortium are expected in early 1965. The agreement, which can be expanded, calls for delivery of 91 vessels for a total of 22,740 gross tons. Those include 76 tuna long-liners, 2 offshore trawlers, and a research laboratory vessel for deep-sea fishing, plus 12 trawlers for fishing in Korea's coastal waters. Delivery is due to be completed in 1967. Vessels received under this agreement are to be managed by the Korea Marine Industrial Development Corporation, a Korean Government corporation. Some of the new vessels will deliver their catches to a United States processor at American Samoa. (United States Embassy, Seoul, December 9, 1964.)

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TRAINING PROGRAM FOR FISHERMEN SPONSORED BY UNITED NATIONS SPECIAL FUND:

On November 13, 1964, representatives of the United Nations Special Fund and the Ko-

Republic of Korea (Contd.):

rean Government signed an agreement for the operation of a fishing training center. The project will be executed by the Food and Agriculture Organization, with the Korean Ministry of Agriculture and Forestry as the cooperating agency. The Special Fund is to contribute US$1,013,500 and the Korean Government is to provide goods and services valued at $919,696 for the training center which is to operate for 5 years.

The program at the training center will emphasize fishing techniques, particularly tuna fishing and various types of trawl fishing. The center will be located at Pusan, but most of the training will be given aboard 2 fishing vessels where the trainees will receive instruction and practical training for a period of 6 to 12 months. A tuna long-liner (280 gross tons) and a trawler (150 gross tons) are to be imported to serve as training vessels. FAO is trying to expedite delivery of the training vessels because fishing vessels ordered from France and Italy are scheduled to begin arriving in early 1965. The training program will help supply crews for the new vessels. (United States Embassy, Seoul, November 23, 1964.)

Mexico

EXPANDED FREEZING AND DISTRIBUTION CENTER FOR FISHERY PRODUCTS OPENS NEW MARKETS:

An important new component of the Mexican Government program to bring low-cost seafood to more people is the freezing and storage plant located in Tepepan, a suburb of Mexico City.

Fig. 1 - Headquarters of Frigorificos de Tepepan, the new Mexican distributing center for refrigerated fishery products.

The plant, formerly a general cold-storage installation, was acquired by the Mexican National Consultative Fisheries Commission in mid-1964. The plant has been converted to handle seafood only. Its present freezing capacity is 15 metric tons a day and storage capacity is 750 tons. Both freezing and storage capacity are being doubled with the addition of new buildings and the installation of new refrigeration equipment--mostly of United States manufacture. Investment in the plant is 8 million pesos (US$640,000).

Three 15-ton tractor-trailer refrigerated trucks have been acquired to haul fresh fish from coastal ports to the plant. During the first few months of operation, fish was brought to the plant by trucks using ice. Ports supplying fish are Mazatlan in Sinaloa, Progreso in Yucatan, and ports in Veracruz State.

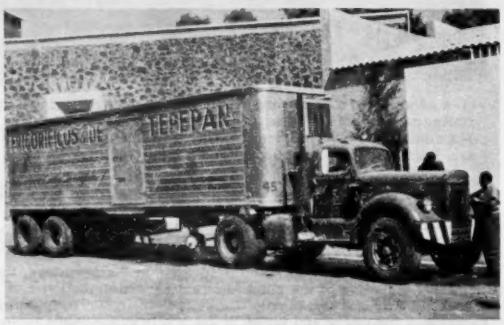

Fig. 2 - One of three refrigerated trucks which haul fish from fishing ports to the freezing plant at Tepepan.

Fig. 3 - Plant engineer and general manager of the Tepepan center standing by refrigerated truck. Partly visible on the truck is the slogan, "Bueno. . .el pescado" (Fish is great). That slogan is broadcast day and night on Mexican radio and television in the campaign to increase fish consumption.

Mexico (Contd.):

Fig. 4 - Shows new construction which will double the freezing and storing capacity of the Tepepan center. At left, a truck unloads Mazatlan fish into the old freezing plant which continues to operate during the new construction.

Most of the fish is received whole. Some is filleted or cut into pieces at the plant. The fish is packed in plyofilm bags for storage and for sale. Shrimp is handled in addition to finfish.

Although a small retail shop is located on the premises, the principal objective of the plant is to act as a distribution center. Twice weekly, pickup trucks fan out from Tepepan for circuits of the cities and towns of the Mexican highlands from the State of Puebla to the State of Guanajuato. The trucks (which may be replaced by better equipment later) deliver seafood on a regular schedule in protein-deficient areas to towns that rarely saw acceptable fish in the past.

According to those in charge, the new program is meeting with great favor, and more fish could be sold than is available. Prices are rather low and considerably under the going prices on the open market in Mexico City. No additional charge is made for fish sold in the outlying areas, as there is one fixed price for each product whether sold in the city or in a country town.

Frigorificos de Tepepan is the first of a series of distribution centers planned by the Mexican Fisheries Commission. If its initial success is sustained, others will be built in strategic locations throughout the country; hauling and distribution truck fleets will be augmented; and production facilities at the fishing ports will be increased. (Regional Fisheries Attache, United States Embassy, Mexico, D.F., December 15, 1964.)

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NEW PORT FACILITY AT ALVARADO (VERACRUZ) COMPLETED:

Mexico's first complete fishing port at Alvarado, Veracruz on the Gulf of Mexico, was inaugurated by Mexico's President Mateos on November 13, 1964. The dedication ceremony on that day marked the end of two years of planning and construction work, the end result being what is considered an up-to-the-minute installation equipped for handling and processing all types of fishery products. The new port facility is administered by the Banco Nacional de Fomento Cooperativo, and was financed by Dutch capital at a reported cost of US$9.6 million.

Built on some 25 acres of filled land on the shore of a protected harbor 45 miles south of the port city of Veracruz, the "pilot" port has every type of facility for complete fishery operations. Both the buildings and the equipment are modern in every respect, and capable of carrying on every activity connected with the production of marine products. Facilities include (1) docks for unloading and servicing fishing vessels;

Fig. 1 - Alvarado fishing Port--left to right, boat dock, marine ways and net locker, mooring inlet, offices for fish buyers, ice plant, fish receiving and auction area, fillet lines, processing plants (freezing, canning, salting, smoking, drying), reduction plant for offal.

(2) dredged channels and a protected mooring basin; (3) boatyard and marine ways capable of handling large fishing vessels; (4) machine shops; (5) net and gear building (with adequate space both indoors and outside for making and drying nets); (6) offices for fish buyers; (7) ice making plant; (8) ice-storage and crushing facilities and for loading boats and trucks; (9) fish unloading conveyors and sorting area; (10) auction area for fresh fish; (11) filleting lines; (12) freezers and cold storage; (13) a canning line and smokehouses; (14) artificial dryers; (15) salting and pickling facilities; (16) a meal and oil plant for fish waste; (17) central offices, dining room, kitchen, and dormitories; (18) auxiliary electric plant; and (19) paved roads and rails connecting all areas. One of the more important facilities is a well equipped quality control laboratory to be staffed by experienced technologists.

The cost breakdown is reported as: (1) dredging, filling, compacting and leveling the land US$3,598,000; (2) construction of buildings and cost of equipment $2,310,000; (3) 5 fishing vessels $1,604,000; (4) nets and other fishing gear, radio communications, 5 refrigerated trucks $1,168,000; (5) elevated water tank, water system, streets, railways, etc. $959,000. Of the total, 75 percent of the funds were spent in Mexico and 25 per-

Fig. 2 - Second of 5 Dutch-built all-purpose fishing vessels for new fishing port--about 100 feet long.

Mexico (Contd.):

cent went toward purchases of vessels and plant equipment abroad, much of it in the Netherlands but some in West Germany and Great Britain and a little in the United States. A Netherlands bank provided 85 percent of the financing and the company that built the port provided the remainder.

The planned capacity of the plant is over 100 tons of fish a day as it is received from the vessels. Adequate space is provided for doubling the capacity of any and all units of production. For example, if the market for any particular product should increase, additional equipment can be installed to put out that product. Original daily capacity is reported to be: fresh fish auction sales, 80 metric tons: cleaning and filleting lines, 48 tons; freezing, 32 tons; canning, 12.5 tons; drying and salting, 16 tons; smoking (hot and cold smoke), 4 tons; reduction plant for waste and inedible fish, 25 tons of raw material; ice, 100 tons. Storage is provided for 298 tons of refrigerated fish, 400 tons of frozen fish, and 350 tons of ice.

Fig. 3 - View of port from dock at net locker, across from mooring basin. Buyers' offices center foreground, ice plant at left, unloading conveyors at extreme left.

Fig. 4 - Net loft at new fishing port.

The fishing fleet to supply the plant will consist initially of 2 local wooden trawlers and 5 steel trawlers built in the Netherlands. Two trawlers from the Netherlands have already been delivered. The vessel Alvarado has been conducting exploratory fishing and gear tests since January 1964, as have the local trawlers. Another vessel, the Tlacotalpan, is being outfitted for early operations, and the other 3 are due for early delivery from the Netherlands. The steel vessels are modern in every respect, carry a variety of electronic aids to navigation and fishing, and can be used with all types of gear. Their reported cost of $320,000 each represents a considerable portion of the total investment in the port. In addition to the project fleet, the plant also plans to buy fish from local trawlers and canoes.

The technical director of the project, both the plant and the fleet, is the former director of the marine station of the Veracruz Institute of Technology. The Food and Agriculture Organization has provided some administrative assistance and has furnished an expert master fisherman to design and demonstrate new kinds of gear and help train local fishermen in their use.

With good highway and rail connections to Mexico City, Puebla, Veracruz, and other centers of populations, Alvarado is expected to play a key role in Mexico's campaign to supply more fishery products to supplement the protein diet of the people.

The director of the National Bank for the Development of Cooperatives, who is in overall charge of the project, has listed the following objectives: (1) a regulator for supplying fish to the centers of consumption; (2) concentrate the production of the Gulf of Mexico, by means of which the stature of the fisheries will be raised; (3) offer the fishermen a guaranteed price; (4) control the sanitary quality of marine products; (5) regulate fish prices; (6) contribute to the supply of fish for the inland consumer at low prices; (7) provide installations and services that will encourage investment in vessels by private owners and cooperatives; (8) promote experiments in modern fishing techniques for the fisheries of the Gulf of Mexico and in methods of industrial packing, for the purpose of planning other installations in other coastal areas. (Fisheries Attache, United States Embassy, Mexico, D. F., November 19, 1964.)

Note: See Commercial Fisheries Review, September 1964 p. 84.

Norway

FISHERIES TRENDS, NOVEMBER 1964: Fish Stick Production Plant in Trondheim: A company which was established in 1963 for large-scale production of fish sticks has decided to build a processing plant in Trondheim. The company is owned by a number of fish freezing companies in north Norway and it is affiliated with the marketing organization for more than 100 Norwegian fish processing plants.

The new company plans to start operations at Trondheim in February 1965 with an initial plant capacity of about 2,000 metric tons of fish sticks annually, to be increased to an annual output of 10,000 tons.

Norwegian Fishing Off the Coast of West Africa: Experimental trawling by 2 Norwegian and 1 Israeli fishing company off the coast of West Africa during the last 3 years has shown promising results and the cooperating companies have now decided to put the operation on a permanent basis. The group has reported plans to operate freezer-trawlers and line-fishing vessels off Africa. The group has recently opened an office in Las Palmas on the Canary Islands, and fishing will take place in the area between the Canaries and Dakar. At present the group operates one trawler, the Havkvern. (United States Embassy, Oslo, December 3, 1964.)

Herring Oil: Norwegian production of herring oil during the first 9 months of 1964 increased to 68,900 short tons from 47,400 tons in January-September 1963. (U. S. Department of Agriculture.)

Norway (Contd.):

Canning Firms May Sponsor Joint Foreign Sales Promotion: Two leading fish canneries in Sweden and Norway have agreed to coordinate their production and distribution. Possibilities for developing joint foreign sales promotion will also be explored. (News of Norway, December 3, 1964.)

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EXPORTS OF CANNED FISHERY PRODUCTS, JANUARY-JUNE 1964:

Norway's exports of canned fishery products in January-June 1964 were up 9 percent in both quantity and value from those in the same period of 1963. The gain was mainly due to larger shipments of smoked brisling and soft herring roe. A decline in exports of smoked sild in oil was offset by a gain in exports of sild sardines packed in other styles.

The leading buyers of Norwegian canned fishery products in the first half of 1964 continued to be the United States and the United Kingdom. (Norwegian Canners Export Journal, September 1964.)

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SALMON SEASON GOOD:

With Norwegian fishermen enjoying one of their best salmon seasons in many years, estimates indicated that Norwegian exports of fresh and frozen salmon in 1964 would reach 1,000 metric tons with a value of £1.6 million

Table 1 - Norwegian Exports of Canned Fishery Products by Type, January-June 1964 and 1963

Product	January-June 1964			January-June 1963		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kroner	US$1,000	Metric Tons	1,000 Kroner	US$1,000
Smoked brisling in oil	2,540	17,262	2,414	2,224	15,559	2,176
Smoked brisling in tomato	349	1,930	270	139	778	109
Smoked small sild in oil	4,924	20,656	2,889	5,552	23,338	3,264
Smoked small sild in tomato	989	3,477	486	590	2,116	295
Unsmoked small sild in oil	214	723	101	112	391	55
Small sild packed otherwise	242	891	125	15	56	8
Kippered herring (Kippers)	1,530	6,695	936	1,570	6,539	914
Mackerel	327	1,563	219	330	1,557	218
Roe, unclassified	816	3,284	459	789	2,821	395
Soft herring roe	957	4,631	648	473	2,293	321
Fish balls	250	641	90	270	700	98
Other canned fish	58	411	57	86	641	90
Shellfish	830	8,610	1,204	766	8,330	1,165
Total	14,026	70,774	9,898	12,916	65,119	9,108

Table 2 - Norwegian Exports of Canned Fishery Products[1] by Country of Destination, January-June 1964 and 1963

Country of Destination	January-June 1964			January-June 1963		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kroner	US$1,000	Metric Tons	1,000 Kroner	US$1,000
Finland	166	838	117	59	392	55
Sweden	281	1,261	176	156	817	115
Belgium-Luxembourg	333	1,593	223	345	1,632	228
Ireland	165	599	84	130	414	58
France	126	509	71	149	617	86
Netherlands	87	300	42	92	320	45
United Kingdom	3,406	15,932	2,228	2,337	9,839	1,376
Japan	9	42	6	170	800	112
West Germany	373	1,420	199	337	1,258	176
East Germany	-	-	-	982	3,532	494
South Africa Republic	898	3,545	495	671	2,806	392
Iraq	68	258	36	7	27	4
Canada	432	2,688	376	331	2,019	282
United States	4,707	25,576	3,577	5,566	29,349	4,105
Australia	713	2,919	408	713	2,841	397
New Zealand	174	750	105	246	1,060	148
Other Countries	1,676	6,055	847	527	2,010	281
Total[2]	13,614	64,285	8,990	12,818	59,733	8,354

1/ Does not include exports of canned shellfish.
2/ Totals are slightly larger than the combined exports of canned fish (excluding shellfish) shown in table 1.
Note: Norwegian kroner 7.15 equals US$1.00.

Norway (Contd.):

(US$4,480,000). Norwegian salmon exports in 1963 were reported as 856 tons.

Prices to Norwegian fishermen during 1964 for large salmon reached 16-20 shilling per kilo (US$1.02-1.27 per pound), according to reports. (Fishing News, London, October 2, 1964.)

* * * * *

FISH MEAL INDUSTRY TRENDS, 1964:

Norwegian total fish meal exports in 1964 may reach 150,000 metric tons and Norwegian sales of fish oil are also expected to reach a high level, according to the Norwegian Ministry of Fisheries. In the first half of 1964, Norwegian exports of fish meal totaled about 100,000 tons valued at Ł5 million (US$14 million). Norwegian total fish meal exports in 1963 amounted to about 100,000 tons. (Fishing News, London, October 2, 1964.)

(Editor's Note: Norwegian production of fish meal in January-September 1964 totaled 147,000 tons compared to 102,000 tons in the same period of 1963, according to preliminary data from the International Association of Fish Meal Manufacturers.)

Peru

FISH MEAL AND OIL INDUSTRY TRENDS AND OUTLOOK, OCTOBER 1964:

Peruvian fish meal production picked up sharply in October 1964 as the usual third quarter seasonal slump in anchoveta fishing ended. In the first 10 months of 1964, Peruvian fish meal production was up 32 percent from that in January-October 1963. Anchoveta fishing is usually good late in the year so total Peruvian fish meal production in 1964 may reach a record 1.5 million metric tons.

Peruvian fish meal exports through the first 10 months of 1964 totaled almost 1.2 million tons, up 23 percent from the same period in 1963.

Prices for Peruvian fish meal in November 1964 continued to ease off from the high levels of late September 1964. Two factors may have helped reduce fish meal prices.

Fig. 1 - Anchovetas being pumped from fishing vessel directly into the truck at Callao.

First, soybean meal prices declined in the United States. Since fish meal and soybean meal can, within limits, be substituted for one another in the preparation of commercial animal feeds, demand for fish meal has been affected. Second, there were reports of European speculative buying of fish meal during the July-September months when anchoveta

Fig. 2 - Conveyor belt system is being used to transport anchovetas into fish meal plant for processing at Chimbote.

fishing usually slumps in Peru. Apparently, the demand anticipated by certain fish meal dealers did not materialize and prices declined under pressure. Spot prices in late November 1964 for fish meal f.o.b. Peru were reported in the US$110 range, with demand for forward shipments reportedly light. (Editor's Note: Earlier reports indicate that the

Peru (Contd.):

Consorcio Pesquero del Peru S. A. has already sold over 500,000 tons of fish meal forward for the first half of 1965.)

Peruvian Fish Meal Production and Exports, January-October 1963-64

Item	October		Jan.-Oct.	
	1964	1963	1964	1963
	(1,000 Metric Tons)			
Production	130	77	1,190	904
Exports	84	83	1,183	963

Peruvian fish oil exports in January-October 1964 totaled 100,000 metric tons including 15,000 tons of crude oil and 85,000 tons of semirefined oil. By way of comparison, Peruvian fish oil exports totaled 110,000 tons in all of 1963 and 151,000 tons in the year 1962. (United States Embassy, Lima, November 30, 1964.)

Poland

FISHERIES TRENDS, SEPTEMBER 1964:

African Trawling: The Polish freezer-trawlers Belona, Barakuda, Dorada, and Albakora began fishing off the North African coast in September 1964. The four vessels planned to sell part of their catches in Nigeria, Ghana, and Liberia.

In early September 1964, the Polish trawlers Wieczno sailed from Swinoujscie for fisheries explorations off West Africa. Aboard the vessel was a team of scientists from the Polish Sea Fisheries Institute.

Harbor Expansion Project at Szczecin: The Polish Government has approved a plan for expansion of the fishing harbor at Szczecin, a Baltic port which serves as a base for offshore fishing vessels. The plan calls for 500 million zloty (US$125 million at the official Polish rate of exchange) to be spent during 1966-1980 for expansion, modernization, and new facilities at Szczecin.

Bulgaria Included in Soviet Bloc Cooperative Fishery Agreement: Officials of Poland, the Soviet Union, and the German Democratic Republic met in Riga (Soviet Union) in early September 1964 for a session of their Joint Committee on fisheries cooperation. Their tripartite agreement on fisheries cooperation was extended to include Bulgaria. (Polish Maritime News, No. 74, October 1964.)

* * * * *

NEW FACTORY-TRAWLER LAUNCHED AT GDANSK:

In late August 1964, the Polish shipyard at Gdansk launched the factory-trawler Andromeda. The new vessel was the 11th successive factory-trawler built by the Gdansk Shipyard for the "Dalmor" Deep-Sea Fishery Cooperative of Gdynia.

Dalmor of Gdynia is Poland's largest fishery cooperative. With a quota of 64,000 metric tons of fish in 1964, crews of Dalmor's factory-trawlers and trawlers had landed 54,000 tons of fish by mid-September 1964. (Polish Maritime News, No. 74, October 1964.)

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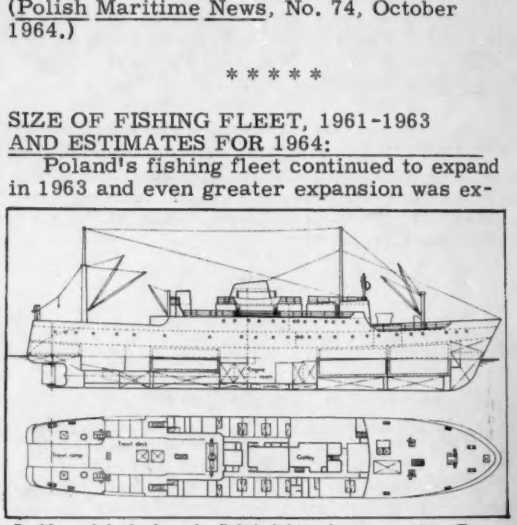
SIZE OF FISHING FLEET, 1961-1963 AND ESTIMATES FOR 1964:

Poland's fishing fleet continued to expand in 1963 and even greater expansion was ex-



Profile and deck plan of a Polish fishing factory trawler, Type B-26. Overall length 272 feet.

Poland's Fleet of Fishing Vessels, 1950, 1955, and 1961-1963

Type of Vessel	1963	1962	1961	1955	1950
	(Number of Vessels)				
Factory trawlers	7	5	2	-	-
Super trawler	52	53	53	8	-
Other trawlers	24	22	15	20	24
Lugger-trawlers	46	46	46	34	-
Luggers	-	1	3	3	3
Cutters	546	545	538	397	338
Auxiliary vessels	3	3	3	2	-
Total	678	675	660	464	365
Total gross registered tons	120,400	110,700	91,700	43,200	18,200

Source: Maly Rocznik Statystyczny, 1962 and 1963.

Poland (Contd.):

pected in 1964. Construction timetables called for the delivery to the Polish fleet in 1964 of 3 "B-15-type" factory-trawlers, 1 "B-18-type" large freezer-trawler, and 6 "B-23-type" freezer-trawlers, as well as seven $2\frac{1}{2}$-meter cutters. (United States Consulate, Poznan, November 25, 1964, and Polish Maritime News, No. 65 and No. 66.)

Note: See Commercial Fisheries Review, Nov. 1964 p. 107 and June 1964 p. 55.

South-West Africa

PILCHARD AND ANCHOVY FISHERY TRENDS, SEPTEMBER 1964:

Pilchard: By September 1964, 6 of the 8 pilchard processors in South-West Africa had taken their 1964 pilchard catch quota of 90,000 short tons. They reported a catch of exceptionally high quality yielding nearly 30 gallons of fish oil per ton of fish during the height of the season. The remaining 2 factories were expected to take their quotas by mid-October and mid-November 1964 to bring the total 1964 pilchard catch in South-West Africa to a record 720,000 tons. The industry expected to easily dispose of its record production. There is a strong demand for South-West African fish meal, and South-West African producers also have an order for about one million cases of canned pilchards for the Philippines.

Frozen pilchards were exported by South-West Africa for the first time in September 1964. The first shipment consisted of 170 tons for Liverpool, England, by a Walvis Bay factory which has a license to catch 5,000 tons of pilchards for export in frozen form.

Fig. 2 - A 51-foot forward-cabin pilchard fishing vessel, built in Cape Town, operating off Walvis Bay.

Anchovy: By the end of September 1964 there were five fishing vessels engaged in catching anchovy off the South-West African coast. The vessels were having some difficulty handling the heavy purse-seine net and equipment in rough seas.

The quality of the anchovy caught in September did not come up to expectations. However, with the advent of warmer weather in October 1964, the anchovy appeared to be im-

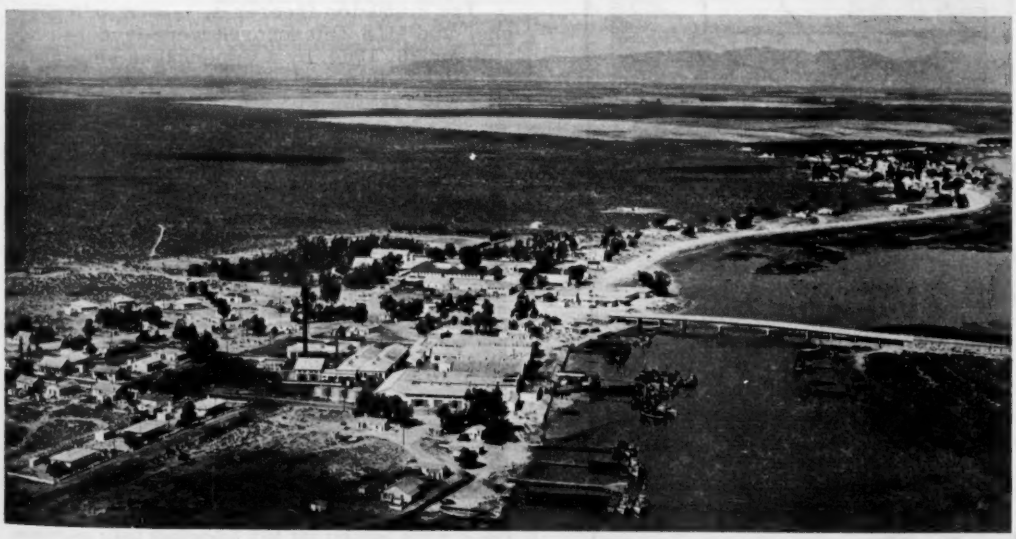


Fig. 1 - Vessel mooring jetties and canning and reduction plant on the banks of the Berg River.

South-West Africa (Contd.):

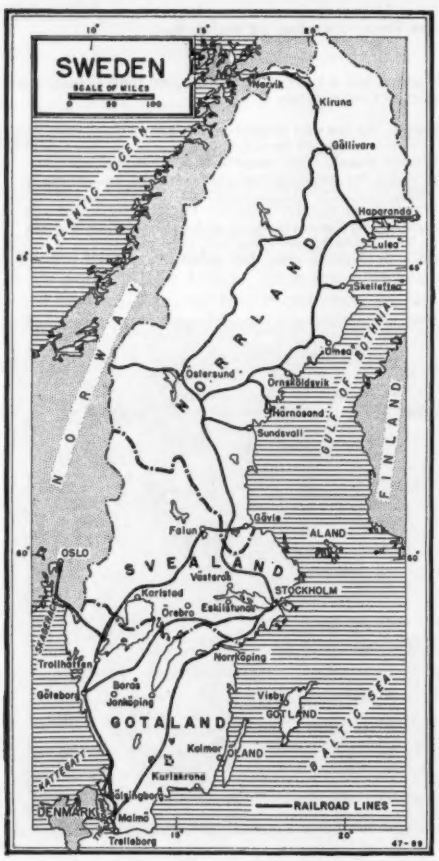
proving in quality; larger catches were also made in early October.

The South-West African Administration has granted the 7 pilchard processing factories at Walvis Bay permission to operate 2 anchovy nets each. No restriction has yet been laid on the quantity to be caught or the season in which catches may be made. (South African Shipping News and Fishing Industry Review, October 1964.)

Sweden

SHRIMP INDUSTRY TRENDS:

Swedish consumption of shrimp--fresh, frozen, or otherwise preserved--has been growing steadily during recent years. Swedish shrimp production satisfies a relatively small portion of domestic requirements so



Sweden Exports of Shrimp, January-June 1964	
Country of Destination	Quantity
	Metric Tons
United States	2
Norway	14
Denmark	41
Finland	18
West Germany	7
Netherlands	1
United Kingdom	17
France	7
Portugal	1
Italy	5
Switzerland	13
Austria	5
Australia	2
Total	133

there is a rather substantial volume of imports. Swedish imports of shrimp during the first 6 months of 1964 totaled 1,139 metric tons, of which Norway supplied 812 tons. Swedish exports of shrimp are small--amounted during the first half of 1964 to 133 tons, of which the United States received only 2 tons. Sweden's fishing industry (including shrimp) is concentrated along the southwest coast in the vicinity of Goteborg. (United States Embassy, Stockholm, December 1, 1964.)

U.S.S.R.

NEW FREEZER-TRAWLERS FOR SOVIETS BUILT IN DENM.

The 2,550-ton freezer-t.. ..lers M/S Gletcher and M/S Zelenoborsk were launched November 26, 1964, by a Copenhagen shipyard for V/O Sudoimport, Moscow. The vessels

Fig. 1 - M/S Gletcher and M/S Zelenoborsk under construction in Copenhagen.

U.S.S.R. (Contd.):

were the 9th and 10th in a series of 11 freezer-trawlers for the U.S.S.R. being built by the Danish shipyard to the following specifications: length between perpendiculars 91 meters (298.5 feet), breadth 16 meters (52.5 feet), and deadweight tonnage 2,550 to 2,600 tons.

The M/S Grumant, the 5th vessel in the series, was completed and delivered to Sudoimport, Moscow, December 7, 1964.

Fig. 2 - New Soviet freezer-trawler M/S Grumant. The vessel has a speed of 14 knots.

The first vessel in the series was the M/S Skryplev, launched May 10, 1962. Another series of 4 freezer-trawlers has been ordered by the Soviets from the Danish shipyard for delivery in 1966.

Since 1932, the Copenhagen shipyard has launched 43 vessels for Sudoimport, of which 31 were fish-freezer vessels. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, December 9 and 15, 1964.)

West Africa

CANNED SARDINE INDUSTRY OUTLOOK:

Summary: Sardines are believed to be plentiful all along the Atlantic Coast of West Africa, but Morocco and the South Africa Republic are the only countries in the area with a significant canned sardine industry. (In Africa the term sardine includes the Sardina pilchardus of Morocco, the Sardinella aurita and Sardinella eba of the Gulf of Guinea, and the Sardinops or pilchard of the South Africa Republic.)

No large increase in canned sardine production in West African countries is expected in the near future. Senegal and Ghana have plans for entering the canned sardine industry, but their effect on the world market will probably be slight. A small cannery in the Congo may resume sardine packing, but its capacity is very small. In the South Africa Republic, production is expected to keep pace with world demand and perhaps show a moderate increase. On the other hand, the Moroccan canned sardine industry may not be able to survive if it loses its special privileges in the French market.

Morocco: The Moroccan canned sardine industry produces for the export market. Moroccan canned sardine exports have ranged from 1.4 million cases during the 1955/56 season to 2.1 million cases in the 1962/63 season. Moroccan sardines are usually canned in oil in 4.5-ounce or 3.75-ounce cans (100 cans to the case).

A total of 700,000 cases of Moroccan sardines is allowed to enter France duty-free each year. In the 1962/63 season, Moroccan canned sardine exports to France amounted to 759,766 cases; other leading buyers were Ghana with 201,171 cases, West Germany with 234,197 cases, Italy with 100,974 cases, the Soviet Union with 87,698 cases, and Madagascar with 65,386 cases. Morocco exported only 26,152 cases of canned sardines to the United States in 1962/63.

The Moroccan canned sardine industry in 1963 consisted of 80 plants supported by a fishing fleet of about 195 vessels--mostly Diesel-powered purse-seiners ranging in length from 15 to 18 meters (49 to 59 feet).

Production and export quotas for each sardine plant are assigned by the Moroccan Government, based upon the French duty-free quota, general market conditions, and carryover inventories. For some years, exports to France have been the mainstay of the Moroccan canned sardine industry. One report indicated that the profit per case for Moroccan exports to France has been as high as US$5.50, while canned sardine exports to other countries often result in losses. The continuation of the duty-free French market is obviously of critical importance to the Moroccan industry. Associate membership for Morocco in the European Common Market would probably result in continued access to the French market and even in opening up of other Common Market countries to Moroccan sardines on the same basis. But Morocco may be reluctant to join the European Common Market because of an unfavorable trade balance. It is expected that this question will be resolved one way or the other by 1966 or 1967.

To survive without the privileged French market, the Moroccan sardine industry would have to reorganize its entire canning program to improve efficiency, cut costs, and achieve a competitive position in the world market. As an alternative, the Moroccan sardine industry might consider switching to fish meal and oil production exclusively.

South Africa Republic: Canneries in the South Africa Republic account for roughly 10 percent of world production of canned sardines and herring-like fish. The South Africa Republic (including the Territory of South-West Africa) produced 50,586 short tons of canned pilchards in January-June 1964 (the main canning season), as compared with 40,498 short tons in the year 1963. Accounting for the bulk of South African production, the 8 plants in South-West Africa packed 47,859 short tons of pilchards in January-June 1964 and 32,053 short tons in the year 1963. The remainder of the South African production was canned in 15 plants on the Cape west coast. Most of the pilchard pack was canned as 1-pound talls and 1-pound ovals in tomato sauce.

In 1963, the South Africa Republic exported a total of 25,673 short tons of canned pilchards valued at US$7.4 million. The leading buyers were the United States, the United Kingdom, Belgium, Italy, and Asian countries such as the Philippines.

Production and exports of canned sardines in the South Africa Republic are regulated by the South African Canners Association. That group assigns production quotas to individual

West Africa (Contd.):

plants, allocates orders for exports, and handles sales of all canned fishery products. Some sales assistance is provided by the Export Promotion Division of the Government Department of Commerce and Industry.

Senegal: Limited production of canned sardines has been started by a tuna cannery in Senegal which hopes to export canned sardines to France, Nigeria, the Ivory Coast, and Ghana. But a small purse-seiner based at Dakar is the only vessel in Senegal now fishing for sardines (aside from the traditional canoe fleet). The present Senegalese ex-vessel sardine price of about US$48 per metric ton is considered high for large-scale canning. The Government of Senegal hopes to reduce that price to about US$24 per metric ton by subsidizing local construction of fishing vessels of 30 meters (98 feet). New vessels are to be sold on easy credit terms to local cooperatives. One of the new vessels should be completed in 1965, and two each in subsequent years. If the sardine ex-vessel price drops, the Senegalese Government plans to subsidize at least one sardine canning plant.

Ghana: Construction of two sardine canneries has started in Ghana. A total pack of 9,720 metric tons of canned sardines per year is scheduled at the plants when they enter production. Completion of the plants is scheduled for the end of 1965, with production to start early in 1966. Nationalization of Ghana's fishing industry is virtually complete and a number of ambitious plans have been announced for the development of the industry. Sardine canning is prominent among those. Carrying out the plans, however, will require the solution of several problems, such as the severe foreign exchange difficulties. Another problem is the comparatively high prices set for fish by the Ghana Fishing Corporation. A wholesale price list of that company dated September 1, 1964, listed frozen sardines packed in 30-kilogram (66-pound) cartons at approximately 17 U.S. cents per pound. A drastic change in price structure, plus a sizable increase in production, will obviously be necessary for an economically successful canning operation in Ghana.

Congo: At Pointe-Noire in the Congo there is a small tuna and pilchard cannery which has operated in recent years on a somewhat spotty basis. Its production is sold mostly in the countries of the Union of Equatorial Africa. The plant has a daily canned pilchard capacity of about 5,000 cans (1-pound ovals) in tomato sauce. In 1961 a total of 215 metric tons of canned pilchards was produced by the plant. In the summer of 1964 after a lapse of two years in pilchard production, the cannery reported plans for a resumption of pilchard canning on a limited basis. (Fisheries Attache, United States Embassy, Abidjan, November 20, 1964.)

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FISH MEAL AND OIL INDUSTRY OUTLOOK AND GENERAL FISHERIES SITUATION:

Summary: With the recent awakening of most of the developing West African countries to the potential of their fishery resources, some important developments are certain to be realized in the next few years. These, however, are not expected to have any disturbing effect on the world fish meal and oil industry. In Western Africa, the major developments will probably take place in the field of fish for human consumption. A protein deficiency and a growing population will create strong demands for low-cost food from the sea.

As of November 1964, production of fish meal and fish oil along the western coast of Africa was confined to four areas: the South Africa Republic (including South-West Africa), Angola (a Province of Portugal), Morocco, and the Canary Islands (a Province of Spain). Following are fish meal and oil production data in those areas in 1962-1963:

Country	Fish Meal		Fish Oil	
	1963	1962	1963	1962
	1,000 (Metric Tons)		(Short Tons)	
South Africa Republic:				
Cape West Coast	100	1/	28,000	39,600
South-West Africa	137	1/	18,500	26,300
Total South Africa Republic	237	207	46,500	65,900
Angola	33	33	3,579	3,676
Morocco	22	18	5,665	4,854
Canary Islands	19	2/	-	-
Total Western Africa	311	258	55,744	74,430

1/Breakdown not available.
2/Not available.

The African countries account for roughly 10 or 15 percent of the fish meal and 10 percent of the fish oil produced in the world.

There appears to be no shortage of fish stocks for fish meal and oil production on the west coast of Africa, either in areas of current production or in areas being considered for production. On the contrary, sardine stocks appear to be strikingly abundant, particularly in the Gulf of Guinea. While there are plans for new fish meal plants in Mauritania, Senegal, Ivory Coast, Ghana, and the Canary Islands, none of those will be large enough to have any far-reaching effect on the world market. In the case of the South Africa Republic--the largest producing area--moderate expansion of the fish meal and oil industry is to be expected. Firm control by the South African Government and industry should keep the expansion carefully attuned to world market conditions.

Morocco: Significant expansion in the Moroccan fisheries is not expected in the near future. Although a joint French-Moroccan tuna exploration project is planned, there are no plans to expand the sardine fishery which supplies the Moroccan fish meal industry.

Fishermen of Morocco are reluctant to leave the waters near their home ports (no trip lasts more than 24 hours). As a result, they fail to follow the seasonal movements of the sardine schools. Another factor hampering development of the Moroccan fish meal industry in a competitive world market is the large labor force--both at sea and ashore--imposed by the labor unions with Government

West Africa (Contd.):

approval. Crews of 20 to 24 men are often required aboard vessels well able to operate with a dozen or less.

On the brighter side of the picture is a plant for the production of fish protein concentrate (FPC), or fish flour, built at Agadir with the aid of the Food and Agriculture Organization. The plant, which was scheduled to be completed late in 1964, is to have a capacity of 6,000 to 8,000 metric tons of sardines a year, and is expected to produce from 1,000 to 1,500 metric tons of FPC annually for human consumption. Assuming a quality product and marketing success among the underdeveloped nations of the world, FPC could be a significant factor in the future development of Moroccan fisheries.

Mauritania: Although there is at present no fish meal or oil production in Mauritania, a fishing treaty with Spain signed in February 1964 provides for, among other things, a fish meal plant capable of producing 11,000 metric tons of fish meal annually. Sardinella eba are abundant off Mauritania, particularly in the Port-Etienne area. In addition, the expected expansion of the trawling fleet operating out of Port-Etienne could provide in excess of 50,000 metric tons of "trash" fish annually for fish meal purposes. The completion in the summer of 1964 of a 20-ton per day freezing and processing plant at Port-Etienne, and the scheduled completion of a 75-ton per day freezing plant by late 1964 (about 80 percent complete in July) lend credence to the prediction that by 1967 Port-Etienne will be handling 100,000 metric tons of fish a year for various purposes.

Canary Islands: All of the Canary Islands fish meal production (about 19,000 metric tons in 1963) is shipped to Spain. On the islands of Gran Canaria, Tenerife, and Lanzarote there are a total of 16 fish meal plants. A US$8 million fishing port expansion plan at Las Palmas, scheduled to be started in 1965, includes plans for at least one new and modern fish meal plant. The port expansion plan at Las Palmas is to be financed in part by the World Bank.

Senegal: There is no current production of fish meal or fish oil in Senegal. In the Senegalese development plan for a "tuna complex" at Dakar, however, provision is made for a fish meal plant capable of handling 40,000 metric tons of "trash" fish and 22,500 metric tons of tuna waste annually, with a production of 12,500 metric tons of fish meal a year. But the likelihood of that much fish meal actually being produced is considered rather slim in view of (1) the demand for practically all of the present Senegalese fish catch for human consumption; (2) the preference of the Senegalese Government for a pet food industry rather than a fish meal plant; and (3) the uncertain status of the proposed "tuna complex."

At Djifere in south Senegal there are also plans for a fish meal plant with a capacity of 50 to 100 metric tons of raw fish daily. But the proposed Djifere Project, which would include a number of processing activities, probably won't be completed for a number of years, since it seems to have a low priority. The Government of Senegal is giving top priority to developing a Senegalese tuna fleet.

Ivory Coast: At Abidjan a comprehensive fisheries development project is actively under way, participated in by both Government and private industry. While the primary emphasis of the project is on processing and freezing, it includes provisions for a fish meal plant with a capacity of 50 metric tons of raw material a day. A new tuna cannery is also envisioned. If raw material for the fish meal plant is limited to tuna and processing waste, Ivory Coast fish meal production will be of minor importance in the world picture. However, during the several months when heavy catches of Sardinella eba and Sardinella aurita are taken from the abundant stocks in nearby waters, it is quite possible that some sardine landings would be diverted to fish meal manufacture. The traditional floor price in the Ivory Coast for sardines for human consumption is about US$72 per metric ton, but vessels are subject to production limits. Therefore, during the heavy production season (about 3 months in the fall) a fish meal plant buying sardines might be attractive to the fishing fleet, even at ex-vessel prices of $15 to $20 a metric ton. This is still a future project, however, since it is not expected that such a plant will be built for at least two years.

Ghana: This country presents a different picture from any of the other West African fishing countries. Having now completely nationalized its fisheries under the Ghana Fishing Corporation, Ghana has started an ambitious program of fisheries development. This involves adding some 44 offshore vessels

West Africa (Contd.):

(trawlers and purse-seiners) to its fleet, and constructing 2 canneries, a smoked fish plant, a fried fish section, cold-storage plant, and a fish meal plant, all at Tema. It is believed that the fish meal plant will operate on an intake of some 30 metric tons of fish waste per day from canning and processing operations, in which case meal production would be of little importance. As in other areas of the Gulf of Guinea, sardines are abundant off Ghana. However, current sardine landings in Ghana are in strong demand for human consumption at prices normally of about 1 shilling (14 U.S. cents) a pound. Even with a very radical price drop, it is difficult to conceive of Ghana using sardines for fish meal or canning. As an added complication, Ghana's monetary and foreign exchange problems make it extremely doubtful that its fish meal or oil activities will have any appreciable impact on the competitive world market in the near future.

Angola: Having been severely hit by the world fish meal crisis of the early 1960's, Angola's fishing industry is still in a rather depressed condition. Fish meal production in Angola during January-September 1964, however, was estimated at 42,000 metric tons, which was more than double that in the same period of 1963. Stocks of horse mackerel, sardines, and pilchards--the three species going for meal and oil in Angola--appear to be holding up well, but there are no plans for a significant increase in production.

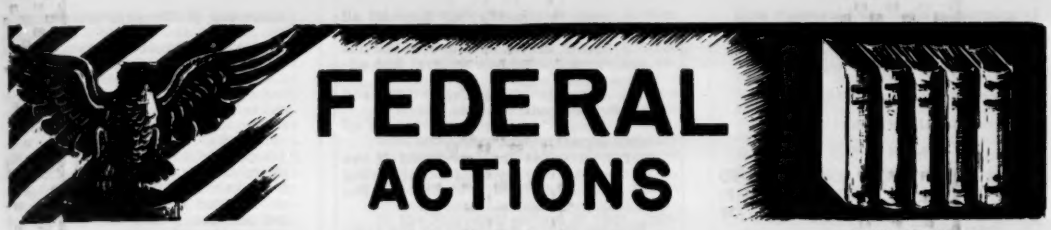
South-West Africa: As was noted previously, South-West Africa (a Territory of the South Africa Republic) is the major producer of fish meal on the African continent. South-West Africa is favored with an extensive continental shelf and an upwelling of the Benguela Current which provides an abundance of fish, particularly pilchard, for fish meal and oil. The industry is tightly controlled, both by Government regulations and by trade associations. At Walvis Bay there are now seven plants producing fish meal and oil. At Luderitz, farther south, there is one new fish meal plant. Each of those plants is assigned an annual catch quota of 90,000 short tons of pilchards. It is expected that the fish meal industry of South-West Africa combined with that of the Cape West Coast will come close to filling the 1964 export quota of 300,000 short tons of fish meal assigned by the Fish Meal Exporters Organization to the South Africa Republic and South-West Africa combined.

In addition to fishing for their quota of pilchards, some of the Walvis Bay plants have experimented with the newly developing anchovy fishery which is not subject to quota. The new anchovy fishery has allowed several of the plants to extend their fishing season and their meal production. Although the presence of anchovy has been known for at least 10 years, they were not fished until late in 1963. Stocks of pilchard are still considered to be large, but an effort is being made to diversify the fisheries in order not to place too much dependence on a single species. It is widely believed that pilchard stocks in South-West African waters are adequate for present operations and for expanded production if necessary. Under the system of Government and industry controls, however, such expansion will take place only if world market conditions indicate its desirability.

South Africa Republic: Like South-West Africa, the Cape West Coast of the South Africa Republic enjoys favorable fishing conditions and abundant stocks of pilchards, maasbanker, and mackerel. With 17 plants producing fish meal and oil on the Cape West Coast, production is controlled by limiting the pilchard season to the period from January 1 to July 31. In addition, during the special maasbanker and mackerel fishing season from November 1 to December 31 the catch may include 10 percent pilchard.

Experimental anchovy fishing, under strict control of the South African Fisheries Development Corporation, was started in October 1963 and has continued on an expanded basis. Some say that the presence of anchovy in substantial numbers may harm the pilchard resource since both fish compete for the same feed.

But that is only speculation, and for the time being operations are continuing on the basis of a controlled season for pilchard, supplemented by an anchovy fishery in its developing stages. It would appear that this will tend to increase fish meal and oil production but only within limits firmly established by Government and industry controls. (Fisheries Attache, United States Embassy, Abidjan, November 13, 1964.)



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

TENTATIVE ORDER ESTABLISHING DEFINITIONS AND STANDARDS OF IDENTITY FOR FROZEN BREADED SHRIMP:

Proposed findings of fact, conclusions, and a tentative order establishing definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp (as an addition to Title 21, Code of Federal Regulations, Part 36) were published in the Federal Register, December 22, 1964, by the U. S. Food and Drug Administration.

The tentative order states that "frozen raw breaded shrimp" shall contain not less than 50 percent shrimp material, and "frozen raw lightly breaded shrimp" shall contain not less than 65 percent shrimp material.

The term "shrimp" is said to mean the tail portion of properly prepared shrimp of commercial species. The optional forms of shrimp which may be processed in the breaded and lightly breaded categories are: (1) fantail or butterfly; (2) butterfly, tail off; (3) round; (4) round, tail off; (5) pieces; and (6) composite units. Detailed specifications for each optional form are included in the proposed standard. Batter and breading ingredients are also defined.

The labeling requirements of the proposed standards of identity state that the label shall name the food, as prepared from each of the optional forms of shrimp specified. (For example, "Breaded fantail shrimp," "Breaded butterfly shrimp, tail off," etc.) The word "prawns" may be added in parentheses immediately after the word "shrimp" if the shrimp are of large size. If the shrimp are from a single geographic area the adjectival designation of that area may appear as part of the name; for example, "Breaded Alaskan shrimp sticks."

The labeling requirements state that the optional ingredients used in batter and breading (as specified in the standard of identity) "shall be listed on the principal display panel or panels of the label with such prominence and conspicuousness as to render them likely to be read and understood by the ordinary individual under customary conditions of purchase. . . ."

The proposed standards of identity define methods of determining the percentage of shrimp material in breaded shrimp. The method provided to determine the shrimp content of composite breaded shrimp products (shrimp "logs" or "sticks," for example) is the same as that prescribed in the United States Standards for Grades of Frozen Raw Breaded Fish Portions (50 CFR 266.21 f) published by the U. S. Bureau of Commercial Fisheries. That method provides no correction factor, i.e., the product must contain the required amount of shrimp.

For breaded shrimp products other than composite forms, the Food and Drug Administration proposes a separate method of determining shrimp content which allows a correction factor of 2 percent.

(The United States Standards for Grades of Frozen Raw Breaded Shrimp issued by the U. S. Bureau of Commercial Fisheries are being revised to reflect the provisions in the Food and Drug Administration standards of identity.)

Interested persons were given until January 21, 1965, to file exceptions to the proposed order establishing definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp.

Following are the proposed findings of fact and tentative order establishing definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp as published in the Federal Register, December 22, 1964:

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 36]

[Docket No. FDC–73]

SHELLFISH; FROZEN RAW BREADED AND LIGHTLY BREADED SHRIMP; DEFINITIONS AND STANDARDS OF IDENTITY

Proposed Findings of Fact and Tentative Order

In the matter of establishing definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp:

Notice of proposed rule making was published in the FEDERAL REGISTER of March 31, 1961 (26 F.R. 2722), setting forth proposals of the National Fisheries Institute, Inc., 1614 Twentieth Street NW., Washington 9, D.C., and the National Shrimp Breaders Association, Inc., 624 South Michigan Avenue, Chicago 5, Ill., representing members who are processors of breaded shrimp, for the establishment of definitions and standards of identity for frozen raw breaded shrimp. An order was published in the FEDERAL REGISTER of May 7, 1963 (28 F.R. 4556), promulgating identity standards for frozen raw breaded shrimp (21 CFR 36.30) and for frozen raw lightly breaded shrimp (21 CFR 36.31). Objections to the order were filed, asserting grounds for a public hearing on several issues, and an announcement was published on July 6, 1963 (28 F.R. 6915) staying the order. In response to the notice in the FEDERAL REGISTER of December 21, 1963 (28 F.R. 13940) and following a notice of postponement published in the issue of January 11, 1964 (29 F.R. 297), a hearing was held.

Based upon the evidence received at the hearing and having given consideration to the written arguments and suggested findings, some of which were adopted in whole or in part and some of which were rejected, the Commissioner, pursuant to the authority provided in the Federal Food, Drug, and Cosmetic Act (secs. 401, 701(e), 52 Stat. 1046, 1055 as amended, 70 Stat. 919; 21 U.S.C. 341, 371(e)) delegated to him by the Secretary of Health, Education, and Welfare (21 CFR 2.90; 29 F.R. 471), proposes that the following findings of fact, conclusions, and definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp be issued:

Findings of fact.[1] Frozen raw breaded shrimp and frozen raw lightly breaded shrimp are prepared by coating appropriate forms of peeled shrimp with safe and suitable batter and breading ingredients and then freezing. Only the "tail" portion of shrimp is used. The tail portions are prepared in the following forms:

a. Split or butterfly, with tail fins remaining and with or without first adjoining shell segment.

b. Split or butterfly, tail fins and all shell segments removed.

c. Round, unsplit shrimp with tail fins remaining and with or without first adjoining shell segment.

d. Round, unsplit shrimp, tail fins and all shell segments removed.

e. Pieces of shrimp, tail fins and all shell segments removed.

f. Composited units consisting of two or more shrimp pieces or whole shrimp or a combination of both with tail fins and all shell segments removed.

Breaded shrimp is a relatively new commercial food, having been first commercially distributed about 1947 or 1948. Breaded shrimp is prepared from either iced or frozen shrimp or both and from one or more of the so-called white, pink, or brown varieties. Shrimp are obtained from many different parts of the world (R. 151–170, 228, 274; Ex. 2, 27).

2. When frozen raw breaded shrimp first appeared on the market it contained appreciably more shrimp material than breading. Due to many factors, including economics and product acceptability, the percentage of shrimp material in the food decreased. However, a small portion of the production was maintained at a higher percentage of shrimp for those purchasers, primarily volume purchasers, such as institutional users, who wanted such higher shrimp percentage (R. 124, 170, 234).

3. After negotiations with industry, the United States Department of the Interior, through its Fish and Wildlife Service, caused to be published United States Standards for Grades of Frozen Raw Breaded Shrimp with an effective date of March 1, 1958. These standards were recodified and republished on July 1, 1958, by the United States Department of the Interior. Within 2 or 3 years after publication of the grade standards, approximately 85 percent of the production of breaded shrimp was being inspected by the United States Department of the Interior for compliance. Among other requirements, the product description of the standards for grades requires a minimum of 50 percent shrimp material as determined by the procedure set out in the grade standards (R. 608; Ex. 26).

4. The Food and Drug Administration order establishing the definitions and standards of identity for frozen raw breaded shrimp and frozen raw lightly breaded shrimp invited persons claiming to be adversely affected by such order to submit relevant objections specifying with particularity that part of the order to which objection was taken. In the event a hearing should be required on an issue or issues raised by objectors, they were to be prepared to support such objections at the hearing.

A person claiming to be adversely affected by the order objected to the requirement that frozen raw breaded shrimp contain not less than 50 percent shrimp material. He proposed instead that the minimum shrimp material for the food be set at 60 percent. He also objected because the order did not require the size of the raw shrimp used to be listed on the label; because standards were not established for size based on the number of shrimp per pound; because the order did not require the numerical percentage of breading actually in the food to be declared on the label; because it did not require label statement of the geographic origin of the shrimp; and because it did not limit the time raw frozen shrimp may be held in storage prior to breading.

Others claiming to be adversely affected objected to the order because it did not provide for optional use of alternative names for the food designated as "breaded shrimp pieces"; because it did not provide for the optional use of the alternative designation "breaded round fantail shrimp" for the food designated as "breaded round shrimp"; because it did not specify that size of those large shrimp that the order permitted to be parenthetically designated as "prawns"; and because the method for determination of the percentage of shrimp material in the food included the use of a rubber-tipped glass stirring rod.

The objections were duly noted and set out as issues for the hearing. At the hearing, no objectors or representatives of the objectors, nor any other person supported the objections listed in this finding of fact. Accordingly, there is no basis in the record for changing the order as it concerns these issues (Ex. 2, 4).

5. Some consumers demand breaded shrimp with an appreciably higher proportion of shrimp material than coating. Such lightly breaded shrimp containing not less than 70 percent shrimp material can be prepared. In Federal Specifications, provision is made for the purchase of it and a purchase specification by one of the large grocery chains provides for lightly breaded shrimp with not less than 70 percent shrimp material. However, there was evidence adduced at the hearing that at the 70 percent shrimp material level the present state of the technique of the industry is such that:

a. Only larger size shrimp would satisfactorily lend themselves to being lightly breaded.

b. The coating often shows a number of cracks and voids so that the food would not meet the requirements for Grade A, as set out in the United States Standards for Grades of Frozen Raw Breaded Shrimp.

c. The need for "hand" breading this food increases the price considerably.

d. Packers produce a 70 percent lightly breaded shrimp only upon a customer's order.

On the other hand, breaded shrimp prepared with not less than 65 percent shrimp material substantially overcomes the problems arising with the 70 percent product. Lightly breaded shrimp at the level of 65 percent shrimp material is recognizably different from ordinary breaded shrimp in which the shrimp material amounts to only slightly more than 50 percent (R. 124, 127, 189–192, 219, 234, 235, 238, 320, 325, 532–535, 574, 597–605, 874–876, 918, 1185–1188, 1241, 1244, 1246, 1249, 1250, 1253–1258; Ex. 2, 6, 20, 29–35).

6. Section 403(f) of the Federal Food, Drug, and Cosmetic Act requires mandatory labeling to be placed on food labels with such prominence and conspicuousness as to render it likely to be read and understood under customary conditions of purchase and use. Section 1.9(a) of Title 21, Code of Federal Regulations, points out that this statutory requirement may be offended if required labeling is not shown "on the part or panel of the label which is presented or displayed under customary conditions of purchase." Frozen raw breaded

[1] The citations following each finding of fact refer to the pages of the transcript of testimony and the exhibits received in evidence at the hearing.

shrimp is usually packaged and sold in six-sided packages. Two of the rectangular panels opposite to each other each have a much greater surface area than any of the other four panels. The top one of these panels is ordinarily used as the principal display panel. Principal display panels are easily recognized since they usually carry the manufacturer's brand name, the name of the food in large letters, and often a colorful vignette of the food. In boxes of frozen raw breaded shrimp this panel is sometimes referred to as the main or front panel. Designers of labels and manufacturers of the food intend for this panel to be the one displayed at the point of sale in order to catch the purchaser's eye. It is recognized that sometimes more than one panel is intended for display purposes. Section 403(f) of the act and § 1.9(a) of the regulations apply not only to foods for which there have been established standards of identity but also to nonstandardized foods (R. 179, 180, 290–292; Ex. 21, 22, 41–44, 46–49):

7. Many foods have been defined and standards of identity established in accordance with section 401 of the act. Many of the standards require certain optional ingredients to be listed on the label. A few standardized foods have lengthy lists of optional ingredients providing for many, if not all, to be designated for label declaration. Frozen raw breaded shrimp has a coating that may consist of many ingredients. No objections were received to the order establishing the standard as it concerns the coating ingredients and the provision that it shall be mandatory that they all be listed on labels. The length of the listing of optional ingredients used should not preclude its prominent and conspicuous display. There is substantial evidence of record supporting the placement of the optional ingredient listing on the principal display panel or panels comprising the surface of the label usually displayed to the consumer at the time of purchase. Questions raised concerning the significance and meaning to the consumer of some of the chemical names of certain of the optional ingredients were not sufficient to overcome the need for ready availability of such information to the consumer who seeks such information. The fact that many labels presently used on frozen raw breaded shrimp and other nonstandardized foods do not present the ingredient listing on the principal display panel does not overcome the statutory requirement that the listing be prominent and conspicuous. Evidence of record revealed that the changing of labels or the development of new labels is expensive. However, despite the costs, witnesses revealed that labels are constantly being revised and new labels developed. Some witnesses believed that the order as objected to had required that wherever and as often as the name of the food appeared on the label the ingredient listing must also appear. It was made clear that such listing is to be required only upon the principal display panel (or panels). If the ingredient listing is conspicuously displayed on the principal display panel or panels of the packages of frozen raw breaded shrimp, it is not necessary to require that such labeling immediately precede or follow the name of the food, without intervening written, printed, or graphic matter. It was asserted that it would be difficult to locate and to read the ingredient listing, regardless of position placement on the label, under certain adverse conditions of frost, light, etc. It is not reasonable to conclude that if such adverse conditions sometimes develop it is unnecessary to prescribe the position placement of such listing. On the other hand, it would be reasonable and in the interest of consumers to prescribe the location of the ingredient listing so that under normal and expected conditions of sale such listing may be easily located and read (R. 66, 72, 78, 80, 81, 88, 94, 142, 180, 183, 186, 241–243, 537, 538, 542, 543, 548, 578, 579, 591, 594, 595, 709, 1070, 1071, 1073, 1075–1080, 1083, 1086, 1090, 1091, 1093, 1095, 1097, 1126, 1127, 1130, 1136, 1138, 1145, 1146, 1160, 1161, 1171, 1174; Ex. 2, 41–44, 46–49).

8. A form of frozen raw breaded shrimp is prepared from two or more whole shrimp, that is, the tail portion of the shrimp with all shell and tail fins removed, or pieces of such shrimp, or both. These units are compressed in a mold, frozen, and coated with a batter and breading. Frozen units, prior to coating, may be cut into smaller units. One such product, prepared from blocks, in its finished form is in the shape of fish sticks and is labeled "shrimp sticks." Another such product is prepared from shrimp caught in Alaskan waters. For this latter product the tail portions are peeled, tail fins removed, placed in a mold, and frozen. The frozen composited units of this shrimp material prepared in Alaska are termed "logs." The logs, in frozen form, are shipped to Ponchatoula, La., where they are then sliced perpendicularly to their long axes. The slices are then individually coated with a batter and breading, refrozen, packaged, and distributed. Each slice consists of many pieces of shrimp. In the approximately two years this product had been on the commercial market prior to the date of hearing, the form and size of the individual serving unit was prepared to resemble that of a "jumbo" shrimp of about "10–15 count." It was asserted that the size of the individual shrimp used is so small that they are unmarketable as single breaded units but do have a commercial market when composited.

The composited units prepared from shrimp caught in Alaskan waters, when breaded, have been sold under the name "Alaskan Breaded Shrimp." There is also on the market a product designated by the manufacturer as "Alaskan Angel Shrimp." This product is packaged frozen and glazed in block form and consists of the individual tail portion of peeled shrimp, tail fins removed. When thawed, the individual uncoated tail portions separate one from another. The witness for the processor stated that the word "Angel" in the name of the food has no meaning or significance. The witness for the packer of the Alaskan products testified that both were prepared from tiny shrimp. However, a size comparison of the pieces of shrimp in the breaded composited units and the single units of glazed shrimp with the size designations found in the United States Standards for Grades of Frozen Raw Headless Shrimp revealed that the composited units and the single units were prepared from shrimp consisting of a preponderance of medium-size shrimp. Shrimp of such size from other areas are often prepared as individual breaded units. The composited units prepared from shrimp caught in Alaskan waters could be formed into many shapes, including that shape and size known as "sticks." Composited units could be made from small or broken shrimp, or both, from any waters where shrimp are obtained and in the same shape and size as the composited units prepared in Alaska. The geographic origin of the shrimp is not sufficient to disclose to the consumer the form of the shrimp units. For example, the food sold as "Alaskan Breaded Shrimp" and "Alaskan Angel Shrimp" are different forms of the food the former consisting of composited units and the latter consisting of single units. It is reasonable to believe that the uninitiated consumer would be confused and unable to differentiate the forms of the two foods from the names presently appearing on the labels. This follows from the manner in which the geographic origin is used in both names as presently applied to the labels and to the lack of labeling to show the form of the units. It would not be in the consumer's interest to provide in standards that foods prepared in composite form from shrimp obtained from different geographic areas shall bear the same name, such as "Alaskan breaded shrimp," with no additional meaningful description. Further, it would be confusing to the consumer for the order to provide for foods prepared in different geographic areas but in the same manner and having the same form to bear different names; for example, "Alaskan Breaded Shrimp" vs. "Louisiana Breaded Shrimp."

A witness for the Food and Drug Administration testified that personnel of a large chain store have been advertising and selling the composited form of breaded shrimp from Alaska as "jumbo shrimp," without realizing that the units were not single shrimp. The name of the food apparently did not reveal to the sales personnel that the food consisted of composited units. It is not unreasonable to expect that all the various forms of breaded shrimp units encompassed within the order should be indicative of the form of the units, whether it be single split, single round, single pieces, or composited of several whole shrimp or pieces. It would not be contrary to the consumer's interest to provide in the standards that labels may show the geographic origin of the shrimp (R. 634, 641, 644, 646, 650, 652, 655–658, 661–664, 676–678, 681, 682, 686, 689, 699, 1273, 1276–1279, 1283, 1286, 1288, 1289, 1291, 1292, 1294, 1296, 1299–1304; Ex. 2, 20, 23–25, 48, 49, 54, 55, 57–59).

9. In 1958 the United States Department of the Interior published a standard for grades of frozen raw breaded shrimp wherein the product description requires that the finished food contain not less than 50 percent shrimp material. Such requirement has been continued to the date of the hearing and included in the proposal to establish a standard of identity for the food. The method for determining the percentage of shrimp

Note: The 15th line in the above column is a correction published in the Federal Register, December 25, 1964.

material in the food is incorporated within the grade standard. This method provides for weighing the finished food; removing the coating by means of an agitating water bath; draining and weighing the debreaded shrimp material; and calculating the percentage of shrimp material. To the result obtained from the calculation of shrimp material provision is made for the addition of 5 percent. (For example, if the calculated result for the finished food is 45 percent shrimp material one then adds 5 percent so that the food is now stated to contain 50 percent shrimp material.) A footnote is appended to the calculation in the published grade standard which states, "A tentative correction factor of 5 percent is employed pending completion of definitive studies" (R. 903, 904, 921; Ex. 1, 26).

10. The petitioners proposing the establishment of a standard for frozen raw breaded shrimp provided for a minimum shrimp material content of not less than 50 percent, to be determined in accordance with the method set out in the United States Standards for Grades, including the 5 percent correction factor. Following publication of the proposed standard of identity, the Commissioner of Food and Drugs, after reviewing comments received and considering other information available to him, published the order establishing the definition and standard of identity. In the Commissioner's order, the correction factor was prescribed as plus 2 percent. The change in this value was objected to by interested parties claiming to be adversely affected and was therefore set up as an issue for the hearing.

Some testimony of record would support the complete deletion of a correction factor, particularly in view of the fact that the product is professed to contain not less than 50 percent of shrimp material. However, the question of deleting the correction factor was not an issue for the hearing, and therefore these findings of fact and conclusions restrict themselves to the question of plus 5 versus plus 2. It is readily recognized that any positive adjustment factor favors the packer. It is reasonable to believe that a packer exercising good commercial controls (good controls of processing are available and are being practiced) would minimize processing variations and therefore can easily produce the finished food well within an adjustment factor of plus 2. For some packers who have been producing a frozen raw breaded shrimp with somewhat less than 50 percent shrimp material a slight increase in weight of shrimp material used will make certain that the consumer will receive a finished food, containing not less than 50 percent shrimp material at the time of purchase. It is well established in the processed food industry that with variable raw materials careful producers do not aim for the lower limits of acceptance because of the dangers inherent in such practice. Since all producers of the food would be subject to the same requirement for minimum shrimp material content, and this percentage will be determined in the same manner, none would be placed at a competitive disadvantage by the changes.

Arguments were advanced that reducing the so-called correction factor from plus 5 to plus 2 would increase the costs to the consumer. Although the cost to the consumer for frozen raw breaded shrimp has increased through the years, the production and consumption of the food have increased at a greater rate. It is not reasonable to believe that the question of possibly slightly higher costs being passed on to the consumer in return for the inclusion of more shrimp material is germane to the issue, particularly in view of the fact that many packers are presently supplying foods containing in excess of the 50 percent shrimp material requirement. Additionally, it was argued that small differences in the amount of shrimp material were not recognizable to the consumer and therefore the change from plus 5 to plus 2 is unnecessary in the interest of consumers. Opposed to this was the argument that where consumers were unable to protect themselves it is in this area that the standard serves its purpose best by offering such protection from those packers inclined to substitute cheap breading for expensive shrimp (R. 225, 260, 456, 613, 614, 779, 782, 879, 896, 897, 919, 964, 973, 974, 983, 993, 997–999, 1030, 1031, 1050, 1199–1201, 1205, 1216, 1217, 1230, 1236, 1237; Ex. 1, 2, 4).

11. A witness testified that studies he had carried out in preparation for the hearing would not support the plus 2 adjustment factor ordered by the Commissioner. This study had not been published nor had it been available prior to the hearing. The witness proposed that the plus 5 be retained. However, referring to his own studies he stated that such studies were not definitive. An examination of his data and his testimony as a whole revealed many inconsistencies and incompatibilities. One striking segment of his data revealed that of a particular set of 20 samples of frozen raw breaded shrimp 19 were admittedly prepared with less than 50 percent shrimp material. All 20 samples were frozen and stored prior to analysis. Upon analysis for shrimp material content, when plus 5 was added to the result obtained, all 20 samples were reported to contain 50 percent or more of shrimp material. It is readily seen that it would not be in the interest of the consumer to provide for an adjustment factor of plus 5 since, with such factor products intentionally packed to contain less than 50 percent shrimp material would on examination, appear to be in compliance with the shrimp requirement in the standard (R. 439, 733, 757–759, 778, 790, 844, 867, 1201–1204, 1260, 1262; Ex. 40).

12. The record reveals that the correction factor of plus 5 in the United States Standards for Grades of Frozen Raw Breaded Shrimp was both tentative and inadequate to reasonably reflect the shrimp material level in the finished food. As suggested by the footnote to the procedure, the correction factor was not the result of definitive studies. The plus 5 had been included at the time of publication at the request of industry. No witness at the hearing was aware of any work published in support of such plus 5. In fact, it was asserted that the plus 5 was based on admittedly inadequate information (R. 297–299, 963, 994–996, 1195; Ex. 26).

13. Prior to the publication of the Commissioner's order, the Food and Drug Administration was apprised of the details of a study and recommendation by seafood scientists of the United States Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, concerning the correction factor. Prior to the hearing, the study and recommendation were reported in the Commercial Fisheries Review published by the Bureau of Commercial Fisheries. It was the only published paper, known to the witnesses at the hearing, on the subject. Substantial testimony concerning the investigations reported supports the following:

a. The plus 5 correction factor was only tentative, pending definitive studies.

b. It is desirable to make the correction factor as small as the accuracy of the method will permit to insure uniformity of product.

c. The tentative correction factor of 5 percent is too large.

d. A change in the correction factor from plus 5 to plus 2 more correctly reflects the shrimp content of the finished food.

e. The accuracy of the method for determining the quantity of shrimp material in the finished food warrants the reduction from plus 5 to plus 2.

The study reflects representative commercial handling of the food from preparation to packaging and storage. The published scientific report is definitive of the subject, which was to determine the accuracy of the method for testing samples of frozen raw breaded shrimp in order to reveal the shrimp material content as the consumer receives it. The report embodies a scientific approach to the problem of determining the proper correction factor to be applied in the formula for calculating the amount of shrimp material in breaded shrimp. It is authoritative and reliable. An averaging of results in the report would actually support a slightly negative adjustment factor; that is, on an average basis the percentage of shrimp material in the finished food is slightly higher than that put in at the time of preparation. However, since some samples, when tested, showed a slight decrease in percentage of shrimp material it need not be considered contrary to the promotion of honesty and fair dealing in the interest of consumers to provide a safety factor for the producer by means of an adjustment factor of plus 2. One witness testified that the Bureau of Commercial Fisheries had reviewed the paper and determined that from its accuracy and consideration of the conclusions drawn it warranted publication. Further, prior to publication it had been distributed to representative members of industry for comment and no comments were submitted. Another witness testified that he had personal knowledge of the methods and had personally studied the paper and concluded it supported the conclusions drawn. Further, the data reported had been submitted to statistical analysis and found to warrant the conclusions drawn. The method is reproducible and has a low error. The test is capable of being conducted prior to and at time of consumer purchase and properly reflects the percentage of shrimp material in the food. It is in the interest of consumers to lower the correction factor from plus 5 to plus 2 (R. 780–782, 898–900, 921, 962, 1000–1007, 1049–1051, 1196, 1202, 1212–1223; Ex. 27, 51A–51C).

14. The Commissioner's order required that the method for determining the percentage of shrimp material be the same for all forms of the food provided for, and such method was incorporated in the order. However, substantial evidence of record reveals that the method provided for was not easily applicable to the food in composited form. A witness of the U.S. Department of the Interior testified that the method incorporated in the U.S. Standards for Grades of Frozen Raw Breaded Fish Portions would better reflect the shrimp material content in composited units of raw breaded shrimp. Such method is also provided for in the Federal Specification which covers this item of food (R. 261, 262, 680, 914–916, 1012; Ex. 20, 52).

Conclusions. On the basis of the foregoing findings of fact and taking into consideration the weight of substantial evidence of the entire record, the following conclusions are drawn:

1. Certain objections to the order, which were set up as issues for the hearing, are rejected because the objectors failed to support their objections at the hearing. These objections had been submitted in opposition to the order because:

a. The minimum shrimp material content of frozen raw breaded shrimp should be changed to require a minimum of 60 percent shrimp material.

b. The size of raw shrimp used should be required for label declaration.

c. The order should establish standards for size based on the number of shrimp per pound.

d. Mandatory label declaration of the percentage of breading actually in the package of food should be required.

e. Mandatory label declaration of geographic origin of the shrimp used should be provided for.

f. The order should impose a requirement setting forth the maximum time that shrimp may remain in storage prior to being coated with a batter and breading.

g. Provision should be included for optional use of alternative names for the food designated as "breaded shrimp pieces."

h. The standard should provide for the optional use of an alternative designation "breaded round fantail shrimp" for the food designated as "breaded round shrimp."

i. The standard should include a specification for the size of shrimp that may be parenthetically further designated as "prawns."

j. The method for determining the percentage of shrimp material in the finished food should not provide for the use of a rubber-tipped glass stirring rod.

The order as it relates to the above objections stands as promulgated.

2. The food designated as frozen raw lightly breaded shrimp shall contain not less than 65 percent shrimp material.

3. All safe and suitable coating ingredients are provided for optional use without specific listing in the regulation with certain exceptions. The consumer is unable to determine from a reading of the regulation what specific optional ingredients are permitted. Therefore, the label declaration of optional coating ingredients used in the preparation of the food should appear prominently and conspicuously on the principal panel or panels of the label used for display to the consumer at time of purchase.

4. The food prepared from the tail portion of shrimp from which all shell segments and tail fins are removed and wherein two or more whole shrimp, or pieces of shrimp, or both, are formed and pressed into composite units prior to coating are designated as "Breaded shrimp _____," the blank to be filled in with the words or phrase that accurately describe the shape or form, but which is not misleading. For example, if in the shape of fish sticks the food shall be designated as "Breaded shrimp sticks."

5. The percentage of shrimp material in frozen raw breaded shrimp, other than composited units, shall be calculated as follows:

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded sample}}{\text{Weight of sample}} \times 100 \div 2$$

6. The method for determining the percentage of shrimp material in frozen raw breaded shrimp in the form of composited units shall be in accordance with the method prescribed in the United States Standards for Grades of Frozen Raw Breaded Fish Portions (50 CFR 266.-21(f)).

On the basis of the foregoing findings of fact and conclusions drawn therefrom, it is concluded that it will promote honesty and fair dealing in the interest of consumers to establish definitions and standards of identity as follows:

§ 36.30 Frozen raw breaded shrimp; identity; label statement of optional ingredients.

(a) Frozen raw breaded shrimp is the food prepared by coating one of the optional forms of shrimp specified in paragraph (c) of this section with safe and suitable batter and breading ingredients as provided in paragraph (d) of this section. The food is frozen.

(b) The food tests not less than 50 percent of shrimp material as determined by the method prescribed in paragraph (g) of this section, except that if the shrimp are composite units the method prescribed in paragraph (h) of this section is used.

(c) The term "shrimp" means the tail portion of properly prepared shrimp of commercial species. Except for composite units, each shrimp unit is individually coated. The optional forms of shrimp are:

(1) Fantail or butterfly: Prepared by splitting the shrimp; the shrimp are peeled, except that tail fins remain attached and the shell segment immediately adjacent to the tail fins may be left attached.

(2) Butterfly, tail off: Prepared by splitting the shrimp; tail fins and all shell segments are removed.

(3) Round: Round shrimp, not split; the shrimp are peeled, except that tail fins remain attached and the shell segment immediately adjacent to the tail fins may be left attached.

(4) Round, tail off: Round shrimp, not split; tail fins and all shell segments are removed.

(5) Pieces: Each unit consists of a piece or a part of a shrimp; tail fins and all shell segments are removed.

(6) Composite units: Each unit consists of two or more whole shrimp or pieces of shrimp, or both, formed and pressed into composite units prior to coating; tail fins and all shell segments are removed; large composite units, prior to coating, may be cut into smaller units.

(d) The batter and breading ingredients referred to in paragraph (a) of this section are the fluid constituents and the solid constituents of the coating around the shrimp. These ingredients consist of suitable substances which are not food additives as defined in section 201(s) of the Federal Food, Drug, and Cosmetic Act; or if they are food additives as so defined, they are used in conformity with regulations established pursuant to section 409 of the act. Batter and breading ingredients that perform a useful function are regarded as suitable, except that artificial flavorings, artificial sweeteners, artificial colors, and chemical preservatives, other than those provided for in this paragraph, are not suitable ingredients of frozen raw breaded shrimp. Chemical preservatives that are suitable are:

(1) Ascorbic acid, which may be used in a quantity sufficient to retard development of dark spots on the shrimp; and

(2) The antioxidant preservatives listed in § 121.101(d)(2) of this chapter that may be used to retard development of rancidity of the fat content of the food, in amounts within the limits prescribed by that section.

(e) The label shall name the food, as prepared from each of the optional forms of shrimp specified in paragraph (c) (1) to (6), inclusive, of this section, and following the numbered sequence of such subparagraph, as follows:

(1) "Breaded fantail shrimp." The word "butterfly" may be used in lieu of "fantail" in the name.

(2) "Breaded butterfly shrimp, tail off."

(3) "Breaded round shrimp."

(4) "Breaded round shrimp, tail off."

(5) "Breaded shrimp pieces."

(6) Composite units:

(i) If the composite units are in a shape similar to that of breaded fish sticks the name is "Breaded shrimp sticks"; if they are in the shape of meat cutlets, the name is "Breaded shrimp cutlets."

(ii) If prepared in a shape other than that of sticks or cutlets, the name is "Breaded shrimp _____," the blank to be filled in with the word or phrase that accurately describes the shape, but which is not misleading.

In the case of the names specified in subparagraphs (1) through (5) of this paragraph, the words in each name may be arranged in any order, provided they are so arranged as to be accurately descriptive of the food. The word "prawns" may be added in parentheses immediately after the word "shrimp" in the name of the food if the shrimp are of large size; for example, "Fantail breaded shrimp (prawns)." If the shrimp are from a single geographic area, the adjectival designation of that area may appear as part of the name; for example, "Breaded Alaskan shrimp sticks."

(f) The names of the optional ingredients used, as provided for in paragraph (d) of this section, shall be listed on the principal display panel or panels of the

label with such prominence and conspicuousness as to render them likely to be read and understood by the ordinary individual under customary conditions of purchase. If a spice that also imparts color is used, it shall be designated as "spice and coloring," unless the spice is designated by its specific name. If ascorbic acid is used to retard development of dark spots on the shrimp, it shall be designated as "Ascorbic acid added as a preservative" or "Ascorbic acid added to retard discoloration of shrimp." If any other antioxidant preservative, as provided in paragraph (c) of this section, is used, such preservative shall be designated by its common name followed by the statement "Added as a preservative."

(g) The method for determining percentage of shrimp material for those forms specified in paragraph (c)(1) through (5) of this section is as follows:

(1) *Equipment needed.* (i) Two-gallon container, approximately 9 inches in diameter.

(ii) Two-vaned wooden paddle, each vane measuring approximately 1¾ inches by 3¾ inches.

(iii) Stirring device capable of rotating the wooden paddle at 120 r.p.m.

(iv) Balance accurate to 0.01 ounce (or 0.1 gram).

(v) U.S. Standard sieve No. 20, 12-inch diameter.[1]

(vi) U.S. Standard sieve, ½-inch sieve opening, 12-inch diameter.[1]

(vii) Forceps, blunt points.

(viii) Shallow baking pans.

(ix) Rubber-tipped glass stirring rod.

(2) *Procedure.* (i) Weigh the sample to be debreaded. Fill the container three-fourths full of water at 70° F.–80° F. Suspend the paddle in the container, leaving a clearance of at least 5 inches below the paddle vanes, and adjust speed to 120 r.p.m. Add shrimp and stir for 10 minutes. Stack the sieves, the ½-inch mesh over the No. 20, and pour the contents of the container onto them. Set the sieves under a faucet, preferably with spray attached, and rinse shrimp with no rubbing of flesh, being careful to keep all rinsings over the sieves and not having the stream of water hit the shrimp on the sieve directly. Lay the shrimp out singly on the sieve as rinsed. Inspect each shrimp and use the rubber-tipped rod and the spray to remove the breading material that may remain on any of them, being careful to avoid undue pressure or rubbing, and return each shrimp to the sieve. Remove the top sieve and drain on a slope for 2 minutes, then remove the shrimp to weighing pan. Rinse contents of the No. 20 sieve onto a flat pan and collect any particles other than breading (i.e., flesh and tail fins) and add to shrimp on balance pan and weigh.

(ii) Calculate percent shrimp material:

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded sample}}{\text{Weight of sample}} \times 100 + 2$$

[1] The sieves shall comply with the specifications for wire cloth and sieve frames in "Standard Specifications for Sieves," published March 1, 1940, in L.C. 584 of the U.S. Department of Commerce, National Bureau of Standards.

(h) The method for determining percentage of shrimp material for composite units, specified in paragraph (c)(6) of this section, is as follows:

(1) *Equipment needed.* (i) Water bath (for example a 3 liter to 4 liter beaker).

(ii) Balance accurate to 0.1 gram.

(iii) Clip tongs of wire, plastic, or glass.

(iv) Stop-watch or regular watch readable to a second.

(v) Paper towels.

(vi) Spatula, 4-inch blade with rounded tip.

(vii) Nut picker.

(viii) Thermometer (immersion type) accurate to ±2° F.

(ix) Copper sulfate crystals ($CuSo_4 \cdot 5H_2O$).

(2) *Procedure.* (i) Weigh all composite units in the sample while they are still hard frozen.

(ii) Place each composite unit individually in a water bath that is maintained at 63° F.–86° F., and allow to remain until the breading becomes soft and can easily be removed from the still frozen shrimp material (between 10 seconds to 80 seconds for composite units held in storage at 0° F.). If the composite units were prepared using batters that are difficult to remove after one dipping, redip them for up to 5 seconds after the initial debreading and remove residual batter materials.

[NOTE: Several preliminary trials may be necessary to determine the exact dip time required for "debreading" the composite units in a sample. For these trials only, a saturated solution of copper sulfate (1 pound of copper sulfate in 2 liters of tap water) is necessary. The correct dip time is the minimum time of immersion in the copper sulfate solution required before the breading can easily be scraped off: *Provided*, That the "debreaded" units are still solidly frozen and only a slight trace of blue color is visible on the surface of the "debreaded" shrimp material.]

(iii) Remove the unit from the bath; blot lightly with double thickness of paper toweling; and scrape off or pick out coating from the shrimp material with the spatula or nut picker.

(iv) Weigh all the "debreaded" shrimp material.

(v) Calculate the percentage of shrimp material in the sample, using the following formula:

$$\text{Percent shrimp material} = \frac{\text{Weight of debreaded shrimp sample}}{\text{Weight of sample}} \times 100$$

§ 36.31 Frozen raw lightly breaded shrimp; identity; label statement of optional ingredients.

Frozen raw lightly breaded shrimp complies with the provisions of § 36.30, except that it contains not less than 65 percent of shrimp material, as determined by the method prescribed in § 36.30 (g) or (h), as appropriate, and that in the name prescribed the word "lightly" immediately precedes the words "breaded shrimp."

Any interested person may, within 30 days from the date of publication of this proposed order in the FEDERAL REGISTER, file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue SW., Washington, D.C., 20201, written exceptions thereto, preferably in quintuplicate. Exceptions shall point out with particularity the alleged errors in the findings of fact, conclusions, and proposed order, and shall contain specific references to the pages of the transcript of testimony or to the exhibits on which the exceptions are based. Exceptions may be accompanied by memoranda or briefs in support thereof.

Dated: December 4, 1964.

JOHN L. HARVEY,
Deputy Commissioner of Food and Drugs.

Department of the Interior

FISH AND WILDLIFE SERVICE

SUBSIDY APPLICATION UNDER FISHING FLEET IMPROVEMENT ACT OF 1964:

Boat Pat-San-Marie, Inc., New Bedford, Mass., has applied for a fishing vessel construction differential subsidy (under P. L. 88-498) to aid in the construction of a 100-foot overall steel vessel to engage in the fishery for scallops, groundfish, and flounders.

A hearing on the economic aspects of the application was scheduled to be held on January 25, 1965, in Washington, D. C. The U. S. Bureau of Commercial Fisheries published the notice of hearing in the December 18, 1964, Federal Register.

* * * * *

HEARING ON APPLICATION UNDER FISHING FLEET IMPROVEMENT ACT OF 1964:

Boat Ouingondy, Inc., Marion, Mass., has applied for a fishing vessel construction differential subsidy to aid in the construction of a 100-foot overall steel vessel to engage in the fishery for scallops, groundfish, and flounder.1/

A hearing on the economic aspects of this application was scheduled to be held on January 28, 1965, in Washington, D. C. The U. S. Bureau of Commercial Fisheries published the notice of hearing in the December 31, 1964, Federal Register.

1/The lobster fishery was added by amendment, published in the Federal Register, January 19, 1965.

Department of the Treasury

CHANGES IN ANTIDUMPING REGULATIONS ANNOUNCED:

The United States has moved to improve its procedures for determining whether certain foreign merchandise or commodities are being sold in the United States at prices lower than those charged in the exporters' home market, announced the Treasury Department on December 4, 1964.

The Treasury Department, under the Antidumping Act, must decide in specific cases whether such practices are taking place. Affirmative decisions are passed to the U. S. Tariff Commission, which must then determine that the particular American industries affected have been injured before invoking additional customs duties which are provided under the law.

In reaching its decisions as to whether the sales of imported merchandise come within the legal difinition of "dumping," the Treasury has been willing to accept as "confidential" any material submitted by the parties, and the parties in a dumping dispute have argued their positions to the Treasury privately and separately.

Henceforth, evidence submitted in confidence to help the Treasury reach a judgment will be accepted and treated as confidential only if the Treasury is itself satisfied that the nature of the material requires confidential treatment. However, even though the Treasury may not agree that the material warrants confidential treatment, the Treasury will not disclose it if the person submitting it refuses to authorize disclosure--but, in those circumstances, the information will not be given weight in support of the submitter's position.

In addition, the new regulations will: (1) Allow interested persons to argue their cases before the Treasury in each other's presence rather than separately; (2) Establish standards for determining when differences in sales volumes abroad and in the United States provide a basis for making quantity allowances in price comparisons; (3) Eliminate, in large part, the retroactive application of dumping duties. At present, such duties can be imposed on goods imported as far back as four months prior to the receipt of a complaint; (4) Allow foreign exporters to reimburse to United States importers dumping duties charged on certain shipments made to the United States.

The changes came after a thorough study by the Treasury, with the assistance of academic consultants. Amendments were proposed earlier this year after discussion of the subject at a well-attended public hearing. Following this, a large number of statements were received from domestic producers, importers, exporters, foreign governments, and various associations. The new amendments emerged from that study and broad range of comments.

The amendments as adopted were published in the Federal Register of December 5, 1964, and will go into effect 30 days after their publication. No amendment will be given retroactive effect and the provisions relating to confidentiality of information, and quantity discounts will not apply to pending cases. The amendments as published follow:

Title 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T.D. 56315]

PART 14—APPRAISEMENT

Antidumping

A notice was published in the FEDERAL REGISTER on December 24, 1963 (28 F.R. 14245), stating that the Treasury Department was reviewing its regulations (19 CFR 14.6–14.13) under the Antidumping Act of 1921, as amended (19 U.S.C. 160–173). All interested parties were afforded an opportunity to be heard on January 23, 1964, with regard to the regulations.

After consideration of all written submissions received and oral arguments made at the hearing, a notice of proposed rulemaking setting forth certain proposed amendments relating to procedures under the Antidumping Act was published in the FEDERAL REGISTER on April 23, 1964 (29 F.R. 5474), pursuant to section 4 of the Administrative Procedure Act (5 U.S.C. 1003) and comments were invited to be submitted.

Due consideration now having been given to all comments, views, and other data received, the amendments as set forth below are hereby adopted. The amendments shall become effective, but not retroactively, 30 days after the date of their publication in the FEDERAL REGISTER. However, § 14.6a and the amendments to §§ 14.7(b) (1) and (3) and 14.9(a) shall not be effective with respect to antidumping proceedings in connection with which the question of dumping was raised or presented for the

purposes of sections 201(b) and 202(a) of the Antidumping Act, 1921, as amended (19 U.S.C. 160(b) and 161(a)), before the 30th day following the date of publication of the amendments in the FEDERAL REGISTER.

Section 14.6 is amended as follows:

1. Paragraph (b) is amended;
2. Paragraph (c) is amended;
3. Paragraph (d)(1) is amended;
4. Paragraph (e) is amended.

The amended paragraphs read as follows:

§ 14.6 Suspected dumping.

* * * * *

(b) Any person outside the Customs Service who has information that merchandise is being, or is likely to be, imported into the United States under such circumstances as to bring it within the purview of the Antidumping Act, 1921, as amended," may communicate such information in writing to the Commissioner of Customs. Every such communication shall contain or be accompanied by the following:

(1) A detailed description or sample of the merchandise; the name of the country from which it is being, or is likely to be, imported; the name of the exporter or exporters and producer or producers, if known; and the ports or probable ports of importation into the United States. If no sample is furnished, the Bureau of Customs may call upon the person who furnished the information to furnish samples of the imported and competitive domestic articles, or either.

(2) Such detailed data as are reasonably available with respect to values and prices indicating that such merchandise is being, or is likely to be, sold in the United States at less than its fair value, within the meaning of the Antidumping Act, 1921, as amended, including information as to any differences between the foreign market value or constructed value and the purchase price or exporter's sales price which may be accounted for by any difference in taxes, discounts, incidental costs such as those for packing or freight, or other items.

(3) Such information as is reasonably available to the person furnishing the information as to the total value and volume of domestic production of the merchandise in question.

(4) Such suggestions as the person furnishing the information may have as to specific avenues of investigation to be pursued or questions to be asked in seeking pertinent information.

(c) If any information filed pursuant to paragraph (b) of this section does not conform with the requirements of that paragraph, the Commissioner shall return the communication to the person who submitted it with detailed written advice as to the respects in which it does not conform.

(d)(1) Upon receipt pursuant to paragraph (a) or (b) of this section of information in proper form:

(i) The Commissioner shall conduct a summary investigation. If he determines that the information is patently in error or that the merchandise is not being and is not likely to be imported in more than insignificant quantities he shall so advise the person who submitted the information and the case shall be closed. Otherwise, the Commissioner shall publish a notice in the FEDERAL REGISTER that information in proper form has been received pursuant to paragraph (a) or (b) of this section. This notice, which may be referred to as the "Antidumping Proceeding Notice," will specify whether the information relates to all shipments of the merchandise in question from an exporting country, or only to shipments by certain persons or firms; in the latter case, only the names of such persons and firms will be specified. The notice shall also specify the date on which information in proper form was received and that date shall be the date on which the question of dumping was raised or presented for purposes of sections 201(b) and 202(a) of the Antidumping Act, 1921, as amended (19 U.S.C. 160(b) and 161(a)). The notice shall also contain a summary of the information received. If a person outside the Customs Service raised or presented the question of dumping, his name shall be included in the notice unless a determination under § 14.6a of the regulations of this part requires that his name not be disclosed.

(ii) The Commissioner shall thereupon proceed promptly to decide whether or not reasonable grounds exist to believe or suspect that the merchandise is being, or likely to be, sold at less than its foreign market value (or, in the absence of such value, than its constructed value). To assist him in making this decision the Commissioner, in his discretion, may conduct a brief preliminary investigation into such matters, in addition to the invoice or other papers or information presented to him, as he may deem necessary.

* * * * *

(e) If the Commissioner determines pursuant to paragraph (d)(1)(ii) of this section, or in the course of an investigation under paragraph (d)(3)(i) of this section, that there are reasonable grounds to believe or suspect that any merchandise is being, or is likely to be, sold at less than its foreign market value (or, in the absence of such value, than its constructed value) under the Antidumping Act, he shall publish notice of that fact in the FEDERAL REGISTER, furnishing an adequate description of the merchandise, the name of each country of exportation, and the date of the receipt of the information in proper form, and shall advise all appraisers of his action. This notice may be referred to as the "Withholding of Appraisement Notice." If the belief or suspicion relates only to certain shippers or producers, the notice shall specify that this is the case and that the investigation is limited to the transactions of such shippers or producers. The notice shall also specify whether the appropriate basis of comparison for fair value purposes is purchase price or exporter's sales price if sufficient information is available to so state; otherwise a supplementary notice will be published in the FEDERAL REGISTER as soon as possible which will specify which of such prices is the appropriate basis of comparison for fair value purposes. Upon receipt of such advice, the appraisers shall proceed to withhold appraisement in accordance with the pertinent provisions of § 14.9.

(Secs. 201, 407, 42 Stat. 11, as amended, 16; 19 U.S.C. 160, 173)

Part 14 is amended by deleting present footnote 14; by redesignating present footnote 14a as footnote 14.

Part 14 is amended further by adding a new section designated 14.6a reading as follows:

§ 14.6a Disclosure of information in antidumping proceedings.

(a) *Information generally available.* In general, all information, but not necessarily all documents, obtained by the Treasury Department, including the Bureau of Customs, in connection with any antidumping proceeding will be available for inspection or copying by any interested person, such as the producer of the merchandise, any importer, exporter, or domestic producer of merchandise similar to that which is the subject of the proceeding. With respect to documents prepared by an officer or employee of the United States, factual material, as distinguished from recommendations and evaluations, contained in any such document will be made available by summary or otherwise on the same basis as information contained in other documents. Attention is directed to § 24.12 of this chapter relating to fees charged for providing copies of documents.

(b) *Requests for confidential treatment of information.* Any person who submits information in connection with an antidumping proceeding may request that such information, or any specified part thereof, be held confidential. Information covered by such a request shall be set forth on separate pages from other information; and all such pages shall be clearly marked "Confidential Treatment Requested." The Commissioner of Customs or the Secretary of the Treasury or the delegate of either will determine, pursuant to paragraph (c) of this section, whether such information, or any part thereof, shall be treated as confidential. If it is so determined, the information covered by the determination will not be made available for inspection or copying by any person other than an officer or employee of the United States Government or a person who has been specifically authorized to receive it by the person requesting confidential treatment. If it is determined that information submitted with such a request, or any part thereof, should not be treated as confidential, or that summarized or approximated presentations thereof should be made available for disclosure, the person who has requested confidential treatment thereof shall be promptly so advised and, unless he thereafter agrees that the information, or any specified part or summary or approximated presentations thereof, may be disclosed to all interested parties, the information will not be made available for disclosure, but to the extent that it is self-serving it will be disregarded for the purpose of the determination as to sales below fair value and no reliance shall be placed thereon in this connection.

(c) *Standards for determining whether information will be regarded as confidential.* (1) Information will ordinarily be considered to be confidential only if its disclosure would be of significant competitive advantage to a competitor or would have a significantly adverse effect upon a person supplying the information or upon a person from whom he acquired the information. Further, if disclosure of information in specific terms or with identifying details would be inappropriate under this standard,

the information will ordinarily be considered appropriate for disclosure in generalized, summary or approximated form, without identifying details, unless the Commissioner of Customs or the Secretary of the Treasury or the delegate of either determines that even in such generalized, summary or approximated form, such disclosure would still be of significant competitive advantage to a competitor or would still have a significantly adverse effect upon a person supplying the information or upon a person from whom he acquired the information. As indicated in paragraph (b) of this section, however, the decision that information is not entitled to protection from disclosure in its original or in another form will not lead to its disclosure unless the person supplying it consents to such disclosure.

(2) Information will ordinarily be regarded as appropriate for disclosure if it

(i) Relates to price information;

(ii) Relates to claimed freely available price allowances for quantity purchases; or

(iii) Relates to claimed differences in circumstances of sale.

(3) Information will ordinarily be regarded as confidential if its disclosure would

(i) Disclose business or trade secrets;

(ii) Disclose production costs;

(iii) Disclose distribution costs, except to the extent that such costs are accepted as justifying allowances for quantity or differences in circumstances of sale;

(iv) Disclose the names of particular customers or the price or prices at which particular sales were made.

(Sec. 407, 42 Stat. 18; 19 U.S.C. 173.)

Section 14.7(b) is amended as follows:

1. Subparagraph (1) is amended;
2. Subparagraph (3) is amended;
3. Subparagraph (4) is amended;
4. A new subparagraph (9) is added.

The amended and added subparagraphs of § 14.7(b) read as follows:

§ 14.7 Fair value.

* * * * *

(b) *Calculations of fair value.* * * *

(1) *Quantities.* In comparing the purchase price or exporter's sales price, as the case may be, with such applicable criteria as sales or offers, on which a determination of fair value is to be based, reasonable allowances will be made for differences in quantities if it is established to the satisfaction of the Secretary that the amount of any price differential is wholly or partly due to such differences. In determining the question of allowances for differences in quantity, consideration will be given, among other things, to the practice of the industry in the country of exportation with respect to affording in the home market (or third country markets, where sales to third countries are the basis for comparison) discounts for quantity sales which are freely available to those who purchase in the ordinary course of trade. Allowances for price discounts based on sales in large quantities ordinarily will not be made unless (i) the exporter during the six months prior to the date when the question of dumping was raised or presented had been granting quantity discounts of at least the same magnitude with respect to 20 percent or more of such or similar merchandise which he sold in the home market (or in third country markets when sales to third countries are the basis for comparison) and that such discounts had been freely available to all purchasers, or (ii) the exporter can demonstrate that the discounts are warranted on the basis of savings specifically attributable to the quantities involved.

* * * * *

(3) *Similar merchandise.* In comparing the purchase price or exporter's sales price, as the case may be, with the selling price in the home market, or for exportation to countries other than the United States, in the case of similar merchandise described in subdivisions (C), (D), (E), or (F) of section 212(3), Antidumping Act, 1921, as amended (19 U.S.C. 170a(3)), due allowance shall be made for differences in the merchandise. In this regard the Secretary will be guided primarily by the effect of such differences upon the market value of the merchandise but, when appropriate, he may also consider differences in cost of manufacture if it is established to his satisfaction that the amount of any price differential is wholly or partly due to such differences.

(4) *Offering price.* In the determination of fair value, offers will be considered in the absence of sales, but an offer made in circumstances in which acceptance is not reasonably to be expected will not be deemed to be an offer.

* * * * *

(9) *Revision of prices or other changed circumstances.* Whenever the Secretary of the Treasury is satisfied that promptly after the commencement of an antidumping investigation either (i) price revisions have been made which eliminate the likelihood of sales below fair value and that there is no likelihood of resumption of the prices which prevailed before such revision, or (ii) sales to the United States of the merchandise have terminated and will not be resumed; or whenever the Secretary concludes that there are other changed circumstances on the basis of which it may no longer be appropriate to continue an antidumping investigation, the Secretary shall publish a notice to this effect in the FEDERAL REGISTER. The notice shall state the facts relied on by the Secretary in publishing the notice and that those facts are considered to be evidence that there are not and are not likely to be sales below fair value. The notice shall also state that unless persuasive evidence or argument to the contrary is presented within 30 days the Secretary will determine that there are not and are not likely to be sales below fair value.

(Sec. 407, 42 Stat. 18; 19 U.S.C. 173)

Part 14 is amended further by amending examples 4 and 5 under "Examples for Purposes of Illustration" in footnote 15 to read:

Example 4. A foreign producer makes all of his sales, other than those to the United States, for consumption in the country of exportation. The majority of the merchandise thus sold by him is sold in 50-ton lots at list prices, net. However, a discount of 5 percent is granted on sales of more than 500 tons and is freely available to those who purchase in the ordinary course of trade. During the six months preceding the date when the question of dumping was raised, the producer made sales of more than 500 tons each with respect to 15 percent of such or similar merchandise which he sold in the home market. Sales for exportation to the United States are at list prices less 5 percent and have been in quantities of over 500 tons. The 5 percent will not be allowed as a quantity discount because less than 20 percent of such or similar merchandise was sold in the home market in quantities to which such discount was applicable, unless the 5 percent discount can be justified by cost savings. Cost savings can also be used to justify a quantity discount where there were no sales in the home market in quantities sufficient to warrant the granting of the 5 percent discount, and no offers because there is no potential market for such quantities.

In determining whether a discount has been given, the presence or absence of a published price list reflecting such a discount is not controlling. In certain lines of trade, price lists are not commonly published and in others although commonly published they are not commonly adhered to.

The following example also relates to quantity allowances.

Example 5. A foreign producer has the following record of sales at or about the date of sale or exportation to the United States:

Price per lb. for sales in units of 100 lbs. and 1,000 lbs.	Sales for consumption in country of exportation	Sales to the United States
$0.85 (100 lbs.)	200,000 lbs.	
$0.80 (1,000 lbs.)	20,000 lbs.	100,000 lbs.

Although the lower price in the home market appears to obtain for quantities the same as those sold for exportation to the United States at the same price, the quantity sold for home consumption at the lower price is less than 20 percent of the quantity sold in the home market. Accordingly, the price for exportation to the United States is not justified, unless cost savings can be shown to justify the lower price. If 44,000 pounds had been sold in the home market at the $.80 price, the lower price would have been justified for comparison with the price for exportation to the United States.

Section 14.8(a) is amended to read:

§ 14.8 Determination of fact or likelihood of sales at less than fair value; determination of injury; finding of dumping.

(a) Upon receipt from the Commissioner of Customs of the information referred to in § 14.6(d), the Secretary of the Treasury will proceed as promptly as possible to determine tentatively whether or not the merchandise in question is in fact being, or is likely to be, sold in the United States or elsewhere at less than its fair value. As soon as possible the Secretary will publish in the FEDERAL REGISTER a "Notice of Tentative Determination," which will include a statement of the reasons on which the tentative determination is based. Interested persons will be given an opportunity to make such written submissions as they desire, within a period which will be specified in the notice, with respect to the contemplated action. Appropriate consideration will be given to any new or additional information or argument submitted. If any person believes that any information obtained by the Bureau of Customs in the course of an antidumping proceeding is inaccurate or that for any other reason the tentative determination is in error, he may request in writing that the Secretary of the Treasury afford him an opportunity to present his views in this regard. Upon receipt of such a request the Secretary will notify the person who supplied any information, the accuracy of which is questioned

and such other person or persons, if any, as he in his discretion may deem to be appropriate. If the Secretary is satisfied that the circumstances so warrant, an opportunity will be afforded by the Secretary or his delegate for all such persons to appear, through their counsel or in person, accompanied by counsel if they so desire, to make known their respective points of view and to supply such further information or argument as may be of assistance in leading to a conclusion as to the accuracy of the information in question. The Secretary or his delegate may at any time, upon appropriate notice, invite any such person or persons as he in his discretion may deem to be appropriate to supply him orally with information or argument. As soon as possible thereafter, the Secretary will make a final determination, except that the Secretary may defer making an affirmative determination of sales below fair value during the pendency of any other antidumping proceeding which relates to the same class or kind of merchandise imported from another foreign country. The Secretary will defer making an affirmative determination only if he is satisfied that deferral is appropriate under all of the circumstances. Circumstances which the Secretary will take into consideration will include the dates on which information relating to the various antidumping proceedings came to his attention, the volume of sales involved in each proceeding, elements of hardship, if any, and probable extent of delay which deferral would entail. No determination that sales are not below fair value will be deferred because of this provision. Whenever the Secretary makes a determination of sales at less than fair value he will so advise the United States Tariff Commission.

* * * * *

(Secs. 201, 407, 42 Stat. 11, as amended, 18; 19 U.S.C. 160, 173)

Section 14.9 is amended as follows:

1. Paragraph (a) is amended;
2. Paragraph (f) is amended.

The amended paragraphs of § 14.9 read as follows:

§ 14.9 Action by the appraiser.

(a) Upon receipt of advice from the Commissioner of Customs pursuant to § 14.6(e), if the Commissioner's "Withholding of Appraisement Notice" shall specify that the proper basis of comparison for fair value purposes is exporter's sales price or if that notice does not specify the appropriate basis of comparison for fair value purposes, each appraiser shall withhold appraisement as to such merchandise entered, or withdrawn from warehouse, for consumption, on any date after the 120th day before the question of dumping was raised by or presented to the Secretary of the Treasury or his delegate. If the Commissioner's "Withholding of Appraisement Notice," including any supplementary notice, shall specify that the proper basis of comparison for fair value purposes is purchase price, the appraiser shall withhold appraisement as to such merchandise entered, or withdrawn from warehouse, for consumption, after the date of publication of the "Withholding of Appraisement Notice." Each appraiser shall notify the collector and importer immediately of each lot of merchandise with respect to which appraisement is so withheld. Upon advice of a finding made in accordance with § 14.8 (b), the appraiser shall give immediate notice thereof to the collector and the importer when any shipment subject thereto is imported after the date of the finding and information is not on hand for completion of appraisement of such shipment. Customs Form 6459 shall be used to notify the collector and importer whenever appraisement is withheld under this paragraph.

* * * * *

(f) In calculating purchase price or exporter's sales price, as the case may be, there shall be deducted the amount of any special dumping duties which are, or will be, paid by the manufacturer, producer, seller, or exporter, or which are, or will be, refunded to the importer by the manufacturer, producer, seller, or exporter, either directly or indirectly, but a warranty of nonapplicability of dumping duties granted to an importer with respect to merchandise which is (1) purchased, or agreed to be purchased, before publication of a "Withholding of Appraisement Notice" with respect to such merchandise and (2) exported before a determination of sales below fair value is made, will not be regarded as affecting purchase price or exporter's sales price.

(Secs. 201, 202, 203, 204, 208, 407, 42 Stat. 11, as amended, 12, 13, 14, 18, sec. 486, 46 Stat. 725, as amended; 19 U.S.C. 160, 161, 162, 163, 167, 173, 1486)

[SEAL] LESTER D. JOHNSON,
Acting Commissioner of Customs.

Approved: November 25, 1964.

JAMES A. REED,
Assistant Secretary of the Treasury.

BUREAU OF CUSTOMS

RULING ON FOREIGN FISHERY LANDINGS IN U. S. PORTS:

While foreign-flag vessels may not fish in territorial waters of the United States nor land in the United States fish taken aboard on the high seas, there is no prohibition against such vessels landing fish taken aboard in the territorial waters or a port of a foreign country, the U. S. Bureau of Customs has ruled.

In reply to an inquiry from a collector of customs as to whether a Canadian vessel may land its catch of fish taken in Canadian territorial waters, and whether such waters may be deemed to extend beyond the 3-mile limit, the Acting Commissioner of Customs cited Section 251, title 46, U. S. Code, and stated:

"Neither that law nor any other, so far as the Bureau is aware, prohibits a foreign-flag vessel from landing in a port of the United States fish taken on board anywhere other than on the high seas or in territorial waters of the United States. This being so, as a matter of law, there is no reason why a Canadian fishing vessel may not land in the United States its catch of fish taken in Canadian territorial waters. Of course, in such case, the place where the fish were taken or laden must be established to the satisfaction of the collector of customs concerned.

"The Department of State has advised the Bureau that, even though Canada has recently claimed exclusive fisheries rights in waters up to a limit of 12 miles from the baseline from which the territorial sea is measured, the limits of the territorial waters themselves have not been extended, and that as a consequence waters outside the 3-mile limit are regarded as waters of the high seas.

"Accordingly, fish taken by Canadian vessels in the area beyond the 3-mile limit, including those taken in the area from 3 miles to 12 miles from the Canadian coast, will be deemed to have been taken on the high seas for the purpose of Section 251 and may not be landed in the United States by the taking vessels or by other vessels to which the catch may have been transferred in such waters."

The Bureau's answer to the collector in no way concerned the question of foreign vessels fishing in the United States territorial waters and may not be construed as authorizing them to do so. On the contrary, foreign vessels are prohibited from fishing in United States waters by Section 251, title 46, United States Code, and by Public Law 88-308, approved May 20, 1964.

It should be pointed out that the answer given conforms to the position taken by the Bureau in previous similar rulings, the first made a short time after the amendment of September 2, 1950, of the act upon which Section 251 as cited above is based. It is thus not a new or different interpretation of the law but merely a restatement of interpretations of long standing. (U. S. Bureau of Customs, December 23, 1964.)

White House

NEW INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA: The Regulations for Preventing Collisions at Sea, 1960, were proclaimed by the President, December 29, 1964, to become effective September 1, 1965, under the Act of September 24, 1963 (P. L. 88-131). The new regulations (commonly called the 1960 International Rules of the Road) apply to all public and private vessels and aircraft of United States registry covered by the legislation. The new International Rules will not be effective, however, on United States waters governed by Inland, Great Lakes, or Western Rivers Rules of the Road. (Federal Register, December 31, 1964.)

Note: See Commercial Fisheries Review, Jan. 1965 p. 103.

Eighty-Ninth Congress (First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

CONGRESS CONVENES: The first session of the 89th Congress convened Jan. 4, 1965, and heard the President's State of the Union message. The message was referred to Committee of the Whole House on the State of the Union and ordered printed as a House document (H. Doc. 1). At one point in his message the President said, "We will seek legal power to prevent pollution of our air and water before it happens. We will step up our effort to control harmful wastes, giving first priority to the cleanup of our most contaminated rivers. We will increase research to learn much more about the control of pollution."

ANADROMOUS FISH CONSERVATION: Introduced in House, H. R. 23 (Dingell), H. R. 24 (Keith), and H. R. 800 (Johnson of Calif.), Jan. 4, 1965; to authorize the Secretary of the Interior to initiate a program for the conservation, development, and enhancement of the Nation's anadromous fish in cooperation with the several states; to Committee on Merchant Marine and Fisheries. Purpose is to carry out a positive and comprehensive program of conserving and developing the Nation's anadromous fishery resources that are subject to depletion from Federal, state, and private water-resource developments and for other causes, or with respect to which this country has international commitments. Species of anadromous fish covered: such as salmon (which spawn in fresh water but live much of their lives in the sea), steelhead trout, shad, and striped bass. Would provide up to $25 million for the period ending June 30, 1969. No state would receive more than 20 percent of total funds; would require a 50 percent cost-sharing ratio between the Federal and a state government; pollution of estuarine areas are to be reported to proper authorities for appropriate action. (These bills are similar to several other bills, especially H. R. 2392 in 88th Congress, which was passed by the House Sept. 1, 1964; sent to Senate, referred to Committee on Commerce Sept. 2, 1964; no action by Senate.)

ANTIDUMPING ACT AMENDMENT: Introduced in House Jan. 4, 1965: H. R. 301 (Dent), H. R. 979 (Conte), H. R. 1165 (Secrest); Jan. 6: H. R. 1674 (Curtin), H. R. 1715 (Morgan); Jan. 7: H. R. 2094 (Whalley); to amend the Antidumping Act, 1921; to Committee on Ways and Means. Would provide for greater certainty, speed, and efficiency in the enforcement and certain changes in wording of the Act. (Similar to numerous bills in 88th Congress; no action.)

BUREAU OF COMMERCIAL FISHERIES REPORT: Senate received Jan. 6, 1965, a letter from the Secretary of the Interior, transmitting, pursuant to law, a report of operations of the Bureau of Commercial Fisheries, for the fiscal year ended June 30, 1963 (with accompanying report); to the Committee on Commerce. Also, House received Jan 4, 1965, a letter from the Secretary of the Interior, transmitting the Ninth Annual Report of the Secretary on Operations of the Bureau of Commercial Fisheries conducted under the Saltonstall-Kennedy Act, pursuant to 68 Stat. 376, as amended; to the Committee on Merchant Marine and Fisheries.

COMMERCIAL FISHERIES ADVANCEMENT FUND: H. R. 841 (Multer) introduced in House Jan. 4, 1965, to amend the act of Aug. 11, 1939, relating to domesti-

cally produced fishery products to establish a fund for the advancement of commercial fisheries; to Committee on Merchant Marine and Fisheries. (Seems to be similar to P. L. 88-309 enacted by the 88th Congress and signed by the President May 20, 1964; cited as Commercial Fisheries Research and Development Act, also known as Federal Aid for State Commercial Fisheries and Development.)

COMMODITY PACKAGING AND LABELING: Introduced in House, H. R. 643 (Multer), H. R. 770 (Gilbert), and H. R. 993 (Farbstein) Jan. 4, 1965; H. R. 1664 (Celler) Jan. 6, 1965; to amend the Clayton Act to prohibit restraints of trade carried into effect through the use of unfair and deceptive methods of packaging or labeling certain consumer commodities distributed in commerce and for other purposes; to the Committee on the Judiciary. Would direct the Food and Drug Administration (for foods, drugs, and cosmetics) and the Federal Trade Commission (for other consumer commodities) to promulgate regulations that will require packages accurately and clearly to give essential product information and fairly represent the contents. (Similar to several bills in 88th Congress; no action.)

FISH HATCHERIES: Senate Jan. 6, 1965, received a letter from the Comptroller General of the United States, transmitting, pursuant to law, a report on weaknesses in administration of the national fish hatchery program, Bureau of Sports Fisheries and Wildlife, U. S. Fish and Wildlife Service, Department of the Interior, dated Oct. 1964 (with an accompanying report); to the Committee on Government Operations.

IMPORT COMMODITY LABELING: H. R. 467 (Herlong) introduced in House Jan. 4, 1965, to amend the Tariff Act of 1930 to require certain new packages of imported articles to be marked to indicate the country of origin, and for other purposes; to the Committee on Ways and Means. (Similar to H. R. 2513 passed by the 88th Congress and sent to President for signature after Senate agreed to conference report on Dec. 18, 1963. President pocket vetoed the bill by allowing it to expire on Dec. 31, 1963.)

S. 88 (McGee and Simpson) introduced in Senate Jan. 6, 1965, to amend the Federal Food, Drug, and Cosmetic Act, as amended to require the labeling of certain imported meats, poultry, and fish; to the Committee on Labor and Public Welfare; similar to H. R. 467. (Similar to several bills in 88th Congress; no action.)

METRIC SYSTEM STUDY: H. R. 38 (McClory) introduced in House Jan. 4, 1965, to provide that the National Bureau of Standards shall conduct a program of investigation, research, and survey to determine the practicability of the adoption by the United States of the metric system of weights and measures; to Committee on Science and Astronautics. (Similar to several bills in 88th Congress; no action.)

OCEANOGRAPHIC AGENCY OR COUNCIL: H. R. 921 (Wilson of Calif.) introduced in House Jan. 4, 1965, to establish the National Oceanographic Agency; to the Committee on Merchant Marine and Fisheries. Would set up a coordinating Federal Agency for oceanography that would help give direction and force to the many experiments and studies already under way, and establish goals and make assignments toward them. Congressman Wilson inserted remarks on this bill in the Congressional Record, Jan. 4, 1965. (Similar to bills in 88th Congress; no action.)

OFFSHORE FISHERY RESOURCES CONSERVATION: S. 49 (Gruening for himself, Muskie and Pastore) introduced in Senate Jan. 6, 1965, to conserve the offshore fishery resources of the United States and its territories, and for other purposes; to the Committee on Interior and Insular Affairs. Congressional Record, Jan. 7, 1965, contained remarks on this bill by Senator Gruening. In part, he stated: "The bill was designed to conserve the offshore fishery resources of the United States to authorize the extension of the territorial waters of our Nation and its territories to 12 miles." He also stated that the need persists to extend our territorial waters and give our fishermen a wider area in which to fish unmolested by foreign competition. "Today," he said, "49 nations have extended their territorial waters to 12 miles or more at the same time foreign vessels are fishing off our shores in ever-increasing numbers . . . ." He pointed out that the following countries, as of December 1, 1964, according to information supplied by the Library of Congress, Legislative Reference Service, claim territorial limits or zones for special purposes, including fishing, which extend to at least 12 miles from the coasts: Albania, Algeria, Brazil, Bulgaria, Byelorussian S.S.R., Cambodia, Canada, Ceylon, Chile, Communist China, Colombia, Costa Rica, Cyprus, Dominican Republic, Ecuador, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Iceland, India, Indonesia, Iran, Republic of Korea, Libya, Malagasy Republic, Morocco, Norway, Panama, Peru, Rumania, Saudi Arabia, Senegal, South Africa, Sudan, Syria, Tanzania, Thailand, Togo, Tunisia, Turkey, Ukrainian S.S.R., U.S.S.R., United Arab Republic, United Kingdom, Uruguay, Venezuela, Vietnam (South). It is expected that the following nations will shortly ratify the European Fishery Convention of 1964 which claims a 3 mile territorial sea plus 3 miles exclusive fishing zone plus 6 additional miles which is restricted to nations party to the convention: Denmark, France, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden. So the total may climb to 58 countries claiming jurisdiction over at least 12 miles of territorial sea for fishing purposes. He also stated that we have given in grants the sum of $14,693,024 since 1955 to build up the fisheries of other nations. That total includes $5,351,000 to help the fishermen of Korea, $1,355,670 to assist the fishermen of Pakistan, and $907,198 to assist the fishermen of Indonesia. Senator Gruening's remarks were followed by a reprint of his speech, "Our Fisheries Need Greater and Firmer Support and a 12-Mile Limit" given at the 16th Annual Session of the Gulf and Caribbean Fisheries Institute, Miami, Fla., Nov. 11, 1963. (Similar to S. 1816 in 88th Congress; no action.)

OUTER CONTINENTAL SHELF RESTRICTED AREAS: Senate Jan. 7, 1965, received 3 letters from the Secretary of the Air Force, transmitting drafts of proposed legislation to provide for the restriction of certain areas in the outer Continental Shelf for defense purposes--(1) the Eastern Test Range, (2) Gulf Test Range, Gulf of Mexico, (3) Matagorda Water Range; and for other purposes (with accompanying papers); to the Committee on Interior and Insular Affairs.

PACIFIC SOUTHWEST WATER RESOURCES: H. R. 313 (Hosmer) introduced in House Jan. 4, 1965, to authorize the coordinated development of the water resources of the Pacific Southwest, and for other purposes; to Committee on Interior and Insular Affairs. Also S. 294 (Kuchel) introduced in Senate Jan. 6, 1965.

PRICE DISCRIMINATION PRACTICES: H. R. 601 (Multer) introduced in House Jan. 4, 1965, to amend the

Federal Trade Commission Act to strengthen independent competitive enterprise by providing for fair competitive acts, practices, and methods of competition, and for other purposes. Principally would prevent price discrimination or selling at unreasonably low prices. (Similar to several bills in 88th Congress; no action.)

SCIENCE AND TECHNOLOGY COMMISSION: H. R. 15 (Teague of Texas) introduced in House Jan. 4, 1965, for the establishment of a Commission on Science and Technology; to Committee on Science and Astronautics. Commission would be composed of representatives from the legislative and executive branches of the Government and of persons from private life who are eminent in one or more fields of science or engineering, or who are qualified and experienced in policy determination and administration of industrial scientific research and technological activities. Would provide for a study of all of the programs, methods and procedures of the Federal departments and agencies which are operating, conducting, and financing scientific programs, with objective of bringing about more economy and efficiency in the performance of these essential activities and functions. (Similar to S. 816 in 88th Congress; passed Senate Mar. 8, 1963; received by House Mar. 11, 1963, but no further action.)

TRADE EXPANSION ACT AMENDMENT: Introduced in House H. R. 656 (Pucinski) and H. R. 1166 (Secrest) Jan. 4, 1965; H. R. 2096 (Whalley) Jan. 7, 1965; to amend the Trade Expansion Act of 1962 to provide judicial review of certain determinations of the Tariff Commission and for other purposes; to the Committee on Ways and Means.

VESSEL JANICE VEE: H. R. 2137 (Gibbons) private bill, introduced in House Jan. 7, 1965, to permit the vessel Janice Vee to be documented for use in the fisheries and coastwise trade; to the Committee on Merchant Marine and Fisheries.

WATER POLLUTION CONTROL ACT: H. R. 982 (Dingell) introduced in House Jan. 4, 1965, to amend the Federal Water Pollution Control Act, as amended, and the Clean Air Act, as amended, to provide for improved cooperation by Federal agencies to control water and air pollution from Federal installations and facilities and to control automotive vehicle air pollution; to the Committee on Public Works.

WATER POLLUTION CONTROL ADMINISTRATION: introduced in House, Jan. 4, 1965: H. R. 151 (Rodino), H. R. 983 (Dingell); Jan. 7, H. R. 2064 (Madden); to amend the Federal Water Pollution Control Act, as amended, to establish the Federal Water Pollution Control Administration, to provide grants for research and development, to increase grants for construction of municipal sewage treatment works, to authorize the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate waters, and for other purposes; to the Committee on Public Works. Also S. 4 (Muskie for himself and 25 other Senators) introduced in Senate Jan. 6, 1965, similar to H. R. 151. (Similar to several bills in 88th Congress, especially S. 649 passed by Senate Oct. 13, 1963, and reported favorably by House Committee on Public Works Sept. 3, 1964; no further action.)

WATER PROJECT RECREATION ACT: H. R. 52 (Aspinall) introduced in House Jan. 4, 1965, to provide uniform policies with respect to recreation and fish and wildlife benefits and costs of Federal multiple-purpose water projects, and to provide the Secretary of the Interior with authority for recreation development of projects under his control; to Committee on Interior and Insular Affairs.

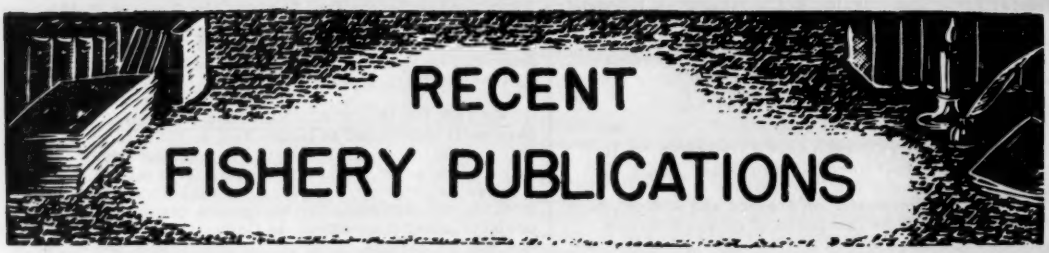
WATER RESOURCES PLANNING ACT: S. 22 (Anderson for himself and 5 other Senators) introduced in Senate Jan. 6, 1965, to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a water resources council and river basin commission, and by providing financial assistance to the states in order to increase state participation in such planning; to the Committee on Interior and Insular Affairs. Also H. R. 1111 (Aspinall) introduced in House Jan. 4, 1965. (Similar to several bills in 88th Congress, especially S. 1111 passed by Senate Dec. 4, 1963; House Committee on Interior and Insular Affairs favorably reported bill to House Sept. 2, but no further action.)

WATER RESOURCES RESEARCH: S. 267 (Anderson for himself and 16 other Senators) introduced Jan. 6, 1965, to promote a more adequate national program of water research; to the Committee on Interior and Insular Affairs.

Eighty-Eighth Congress (Second Session)

METRIC SYSTEM STUDY: Conversion to Metric System, Hearing before the Committee on Commerce, United States Senate, 88th Congress, 2nd session, on S. 1278, a bill to provide that the National Bureau of Standards shall conduct a program of investigation, research, and survey to determine the practicability of the adoption by the United States of the Metric System of Weights and Measures, Jan. 7, 1964, Serial 64, 71 pp., printed. Includes comments, statements and miscellaneous letters, resolutions, etc. of various Federal agencies, and representatives of various associations and business firms, and individuals.

Note: REPORT ON FISHERY ACTIONS IN 87TH AND 88TH CONGRESS: The U. S. Bureau of Commercial Fisheries has issued a leaflet on the status of all legislation of interest to commercial fisheries at the end of the 88th Congress. For copies of MNL-3--"Legislative Actions Affecting Commercial Fisheries, 88th Congress, 1st Session 1963 and 2nd Session 1964," write to the Fishery Market News Service, U. S. Bureau of Commercial Fisheries, 1815 No. Fort Myer Drive, Room 510, Arlington, Va. 22209. A few copies of MNL-3--"Legislative Actions Affecting Commercial Fisheries, 87th Congress, 1st Session 1961 and 2nd Session 1962," are also available upon request. Requests for these leaflets will be filled on a first-come first-served basis until the supply is exhausted.



FISH AND WILDLIFE SERVICE PUBLICATIONS

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CRS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-3602	Florida Landings, 1963 Annual Summary, 15 pp.
CFS-3608	Michigan, Ohio & Wisconsin Landings, June 1964, 6 pp.
CFS-3624	Great Lakes Fisheries, 1963 Annual Summary, 9 pp.
CFS-3640	Frozen Fishery Products, September 1964, 8 pp.
CFS-3646	New Jersey Landings, August 1964, 3 pp.
CFS-3648	Rhode Island Landings, June 1964, 3 pp.
CFS-3650	New York Landings, August 1964, 5 pp.
CFS-3651	Virginia Landings, July 1964, 4 pp.
CFS-3654	Alabama Landings, August 1964, 3 pp.
CFS-3655	Louisiana Landings, August 1964, 3 pp.
CFS-3660	Virginia Landings, August 1964, 4 pp.
CFS-3665	Maine Landings, August 1964, 4 pp.
CFS-3668	Mississippi Landings, July 1964, 3 pp.
CFS-3669	Florida Landings, September 1964, 8 pp.
CFS-3672	Fish Meal and Oil, September 1964, 2 pp.

Sep. No. 722 - Review of Industrial Bottomfish Fishery in Northern Gulf of Mexico, 1959-62.

Sep. No. 723 - Summary of Tuna Observations in the Gulf of Mexico on Cruises of the Exploratory Fishing Vessel Oregon, 1950-63.

Sep. No. 724 - Equipment Note No. 15 - Airlift for Harvesting Oysters.

Sep. No. 725 - Salmon Research Cruise in Western North Pacific.

SSR-Fish. No. 456 - Ecological Studies of Sockeye Salmon and Related Limnological and Climatological Investigations, Brooks Lake, Alaska, 1957, by Theodore R. Merrel, Jr., 69 pp., illus., July 1964.

Operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, Fiscal Year 1963, 118 pp., illus., August 1964. The ninth annual report to the Congress of the activities of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1963, under the provisions of the Saltonstall-Kennedy Act of July 1, 1954. Discusses commercial fishery progress in nationwide programs in technology, market news reporting, statistical reporting, marketing, biological and oceanographic research, foreign trade, and economics. In the Pacific Region, emphasis was placed on the increasing threat to salmon from multiple purpose dams, the fresh halibut grading program, improving the quality of fresh halibut, quality studies of Dungeness crab, measuring changes in fish quality, marketing and home economics activities, and increased market news coverage of Alaska halibut and troll salmon fisheries. The Gulf and South Atlantic Region worked on brown and pink shrimp research, shrimp behavior studies, environmental studies, trawl experiments, biological studies of Atlantic menhaden, striped bass research program, studies on oysters and clams, seasonal sampling of scallop beds, mullet utilization, and product quality control. In the North Atlantic Region, activity centered around oceanographic studies; tagging studies; haddock and scallop abundance; the Atlantic Herring Prerecruit Program; FY 1963; oyster drill study; shellfish ecology; oyster setting in local waters; drill control used by oystermen; survival and growth of juvenile oysters; culture of bivalve food; fish protein supplement; fishing gear research; pelagic trawling; electrical trawling; Maine sardine promotion; and vessel safety program. Great Lakes and Central Region programs included environmental research in Lake Erie; lake trout research; Lake Superior herring studies; controlled atmosphere storage; fishing methods and equipment assistance; consumer education; economic studies; and Great Lakes and inland waters statistics. Alaska Region activities emphasized king crab and shrimp studies; king crab stocks and biology; oceanography investigations; pink salmon ecology; Olsen Bay pink salmon studies; estimating pink salmon returns; pink salmon blood studies; Auke Lake investigations; technology of king crab; and technical assistance to small packers. In the California Area, work went forward on subpopulation studies of sardines; pelagic surveys; behavior studies; tuna operating cost studies; and marketing and education work. Activities in the Hawaii Area included research on the skipjack fishery; introduction of monofilament gill nets; and field trials with gill nets.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE ICHTHYOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, FISH AND WILDLIFE SERVICE, U. S. NATIONAL MUSEUM, WASHINGTON, D. C. 20560.

Contribution to the Knowledge of the Flyingfish Fauna (Exocoetidae) of the Pacific and Indian Oceans, by N. V. Parin, 42 pp., processed, 1964. (Translated from the Russian, Trudy Instituta Okeanologii, vol. 42, 1961, pp. 40-91.)

The Distribution of Deep-Sea Fishes in the Upper Bathypelagic Layer of the Subarctic Waters of the Northern Pacific Ocean, by N. V. Parin, 21 pp., processed, 1964. (Translated from the Russian, Trudy Instituta Okeanologii, Akademii Nauk SSSR, vol. 45, pp. 259-278.)

Systematics, Origin, and History of the Distribution of the Eurasian and North American Perches and Pike-Perches (Genera PERCA, LUCIOPERCA, and STIZOSTEDION), by A. N. Svetovidov and E. A. Dorofeeva, 32 pp., processed, 1964. (Translated from the Russian, Voprosy Ikhtiologii, vol. 3, no. 4, 1963, pp. 625-651.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

(Baltimore) Monthly Summary--Fishery Products, October 1964, 10 pp., illus. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore, Md. 21202.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, October 1964, 16 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, August 1964, 17 pp. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House, 610 S. Canal St., Rm. 1014, Chicago, Ill. 60607.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, October 1964, 11 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 608, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

New England Fisheries--Monthly Summary, October 1964, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, and Provincetown), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

Seattle List of Brokers and Importers of Fishery Products, 1965, 6 pp., November 1964. (Fishery Market New Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Contains the name and complete address of every firm in Seattle, Wash., importing fishery products and their sources. It also lists all Customs House brokers in Seattle.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, October and November 1964, 9 and 7 pp. respectively. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the months indicated.

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Revised Bibliography on the Cutthroat Trout, by Oliver B. Cope, Research Report 65, 48 pp., illus., printed, 1964, 35 cents.

MISCELLANEOUS PUBLICATIONS

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AFRICA:

"Estimating the fisheries potential of African lakes," by M. J. Holden, article, New Scientist, vol. 24, no. 411, October 1, 1964, pp. 20-23, illus., printed, single copy 1s. 3d. (about 20 U. S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England. To provide part of the protein that is lacking in so many African diets the Uganda Fisherie Department is developing the fisheries on 5 large lakes as rapidly as possible by encouraging the use of

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better nets and better canoes with outboard motors, and also by providing markets for the increased catch. However, there is a limit to the maximum fish production from any body of water. In order that the fisheries should not be stimulated beyond this optimum level, the Department has initiated surveys of the lakes to assess their potential sustainable yields.

ALASKA:

Science in Alaska, 1962--Proceedings Thirteenth Alaskan Science Conference, Juneau, Alaska, August 22 to August 26, 1962, edited by George Dahlgren, Jr., 221 pp., illus., processed, April 25, 1963. Alaska Division, American Association for the Advancement of Science, College, Alaska. Among the many papers are 5 of the 9 papers on fisheries presented at the Conference: "The effects of toxaphene treatment on Kitoi Creek, Afognak Island, Alaska," by William L. Sheridan and William R. Meehan; "Loss of isthmus loop tags, Paralithodes camtschatica (Tilesius)," by George W. Gray, Jr.; "An experiment to improve an Alaskan salmon spawning area," by Donald E. Bevan; "A preliminary study of the migration and growth of the Dolly Varden char in Kitoi Bay, Alaska," by Leonard Revet; and "Growth of king crabs Paralithodes camtschatica (Tilesius) in the vicinity of Kodiak Island, Alaska," by Guy C. Powell. Also, there is a report on the general session on "Northeast Pacific Fisheries Program Planning."

ALGINS:

"Edible corn-carbohydrate food coatings. I--Development and physical testing of a starch-algin coating," by L. Allen and others, Food Technology, vol. 17, no. 11, 1963, pp. 99-104, illus., printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

ANCHOVIES:

"Manufacture of anchovies," by W. Brandenburg, article, Fischerei-Forschung, vol. 5, no. 6, 1962, pp. 21-25, printed in German Institut fur Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, Germany.

The Peruvian Anchovy Fishery 1959-1962--Statistics of Catch and Effort and an Attempt to Assess the Fluctuations in the Apparent Abundance of the Stock, by G. Saetersdal, I. Tsykayama, and B. Alegre, 1964 CalCAFI Conference Contribution No. 11, 37 pp., processed, 1964. Instituto del Mar del Peru, Callao, Peru.

BOTTOMFISH:

"Probable state of the resources and stocks of bottomfishes in the Barents Sea, 1963," by T. G. Maslov, article, Nauchno-Tekhnicheskii Byulleten' PINRO, no. 4, 1962, pp. 306, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U. S. S. R.

BYPRODUCTS:

Preliminary Recommended Sanitation Guidelines for Processors of Industrial Fishery Products, 10 pp., processed, February 1964. Agricultural Research Service, U. S. Department of Agriculture, Hyattsville, Md. 20781. These guidelines represent the combined efforts of many individuals and groups interested in preventing Salmonellae infections in livestock, poultry, and man. The report covers requirements for plant premises, transportation of raw and processed materials, containers for processed material, sampling and laboratory examination, training of employees, responsibility for compliance, cleaning agents, and disinfectants.

CANADA:

Noms Francais et Anglais des Poissons de l'Atlantique Canadien (French and English Names of the Canadian Atlantic Fishes), by Vianney Legendre, W. B. Scott, and Julien Bergeron, Report No. 2, 183 pp., processed in French and English, June 1964. Ministere du Tourisme, de la Chasse et de la Peche, Province de Quebec, Canada. Includes the French, English, and scientific names of fish by orders, families, and species, together with remarks on the derivation and citations from literary sources--301 species are listed.

Pêche (Fisheries), 16 pp., illus., printed in French and English. (Reprinted from Quebec Yearbook 1963, pp. 363-377.) The Quebec Department of Industry and Commerce, Quebec Bureau of Statistics, Montreal, Canada. Contains sections covering fishing at the Provincial, National, and world levels; commercial fishing territories; Quebec's maritime fisheries; capital equipment in primary operations; cold-storage plants; Quebec's island fisheries; fishing methods; and biology of cod. Includes statistical tables showing landings by continent, world catch in relation to Canadian and Quebec catches, 1938 and 1947-61; quantity and value, by species, of fish caught, 1960-62; marketed value by principal species, 1961-62; fishermen, vessels, investments and expenses, by area, 1962; cold-storage plants and their capacity in 1962; and total catches, fixed capital and fishermen, by county, 1962.

CANNING:

"Cooking under pressure of sardines and tunny fish," by R. Meesmaecker and Y. Sohier, article, Revue de la Conserve, vol. 18, no. 2, 1963, pp. 171-180, illus., printed in French. Societe d'Edition pour l'Alimentation, 1 rue de la Reale, Paris I, France.

"Experimental canning of low-valued fish," by M. I. Baukin, article, Rybnoe Khoziaistvo, vol. 39, no. 6, 1963, pp. 89-93, printed in Russian. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.

CARP:

"First attempt to breed carp in small Karelian lakes," by Yu. S. Dmitrenko, article, Nauchno-Tekhnicheskii Byulleten' GosNIORKh, vol. 15, pp. 43-46, printed in Russian. Gosudarstvennyi Nauchno-Issledovatel'skii Institut Ozernogo i Rechnogo Rybnogo Khozyaistva, Moscow, U. S. S. R.

CHOLESTEROL:

"The Nobel Prize for Medicine, 1964, the biochemistry of cholesterol," by J. W. Cornforth and G. J. Popjak, article, New Scientist, vol. 24, no. 414, October 22, 1964, pp. 220-221, illus., printed, single copy 1s. 3d. (about 20 U. S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

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These articles are from Materialy po Kompleksnomu Izucheniyu Belogo Morya, vol. 2, 1963, printed in Russian. Akademiya Nauk SSSR, Karelskii Filial, Moscow, U.S.S.R.:

"Polar cod of the Karelian coast of the White Sea," by A. M. Anukhina, pp. 144-158.

"Polar cod of the Solovetski Islands," by K. A. Altukhov, pp. 119-130.

These articles are from Materialy Rybokhozyaistvennykh Issledovanii Severnogo Basseina, no. 2, 1964, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii "PINRO," Murmansk, U.S.S.R.:

"Variations in age composition, sexual maturation, and spawing of cod on the Flemish Cap," by A. I. Postolankin, pp. 16-22.

"Vertical migrations and feeding of cod young in the Barents Sea, September-October," by A. S. Baranenkova, S. S. Drobysheva, and I. Ya. Ponomarenko, pp. 28-34.

"Biology of cod from the eastern part of Tatar Strait," by B. N. El'kina, article, Izvestiya Tikhookeanskogo, Nauchno-Issledovatel'skogo Instituta Morskogo Rybnogo Khozyaistva i Okeanografii "TINRO," vol. 49, 1963, pp. 95-114, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York, N. Y. 10010.

COD AND HADDOCK:

"Quantitative results of the estimates of the numbers of young cod and haddock in the Barents Sea during the winter 1961-62," by A. S. Baranenkova and Z. P. Baranova, article, Nauchno-Tekhnicheskii Byulleten' PINRO, no. 4, 1962, pp. 9-13, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U.S.S.R.

"Results of the estimates of abundance of young cod and haddock in the Barents Sea in winter," by Z. P. Baranova and G. P. Nizovtsev, article, Materialy Rybokhozyaistvennykh Issledovanii Severnogo Basseina, no 2, 1964, pp. 22-28, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii "PINRO," Murmansk, U.S.S.R.

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"Acclimatization of Kamchatka crabs and blue crabs in the Barents Sea," by O. I. Orlov, article, Materialy Rybokhozyaistvennykh Issledovanii Severnogo Basseina, no. 1, 1963, pp. 46-47, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii "PINRO," Murmansk, U.S.S.R.

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"Utilization of the flesh of picked dogfish for food purposes," by V. C. Berezenko, article, Rybnoe Khoziaistvo, vol. 39, no. 7, 1963, pp. 76-77, printed in Russian. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.

ECOLOGY:

"Methods and practice in the ecological analysis of the work of the fishing fleet in the Northern basin," by L. S. Nikol'skii, article, Materialy Rybokhozyaistvennykh Issledovanii Severnogo Basseina, no. 1, 1963, pp. 54-56, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii "PINRO," Murmansk, U.S.S.R.

EELS:

"Eel culture and its efficiency in the waters (reservoirs) of White Russia," by S. V. Kokhnenko and E. A. Borovik, article, Gidrobiologicheskie Issledovaniya, vol. 3, 1962, pp. 324-327, printed in Russian. Institut Zoologii i Botaniki, Akademiya Nauk Eston. SSR, Tartu, Estonian S. S. R.

ELECTRICAL FISHING:

"Biological premises for the development of electrofishing in fresh water," by L. M. Nusenbaum, article, Nauchno-Tekhnicheskii Byulleten' GosNIORKh, vol. 15, pp. 65-68, printed in Russian. Gosudarstvennyi Nauchno-Issledovatel'skii Institut Ozernogo i Rechnogo Rybnogo Khozyaistva, Moscow, U.S.S.R.

"Technical principles of electric fishing," by S. K. Mal'kiavichus, article, Rybnoe Khoziaistvo, vol. 39, no. 4, 1963, pp. 42-52, illus., printed in Russian. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.

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"An electronic pulse generator (for marine electrofishing)," by K. Pabedinskas, no. 3, 1963. pp. 93-99.

"Importance of the kind of impulses of electric current for producing galvanotaxis in Baltic herring (salaka) (on the problem of marine electrofishing)," by G. Daniyulite, no. 3, 1963, pp. 87-92.

"An impulse frequency meter (gear for electrofishing)," by K. Pabedinskas, no. 3, 1963, pp. 100-104.

"Impulse scheme for electro-fishing," by S. K. Mal'kavichyus, no. 2, 1962, pp. 117-133.

"Method of determining the working regime of the electrical part of the equipment for electrofishing," by A. A. Trakis, no. 3, 1963, pp. 80-86.

"Reaction of Atlantic herring to electrical current impulses," by V. Gedminas and G. Daniyulite, no. 2, 1962, pp. 138-143.

"Simple means for directing the tiratron impulse generator (for marine electrofishing)," by K. Pabedinskas, no. 3, 1963, pp. 105-110.

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"Tryptic enzymes from pyloric caeca of mackerel," by P. V. Kamasastry, Science and Culture, vol. 29, 1963, pp. 360-361, printed. Science and Culture, Indian Science News Association, 92 Upper Circular Rd., Calcutta 9, India.

EXPORTS:

Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States, processed, 1964, $6. U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A new classification for United States export commodities was placed in effect January 1, 1965, and designated as Schedule B, 1965 Edition. The old Schedule B, in effect since 1958, became obsolete on December 31, 1964. Schedule B, 1965 Edition, contains some 3,600 classifications for export commodities, compared, with 2,600 classifications under the old Schedule B. It shows 7-digit rather than 5-digit code numbers. The new export classification must be used for all shipments made after December 31, 1964, and the new 7-digit numbers must be reported for all such shipments. The 1965 edition is a looseleaf manual which lists the 3,600 classifications (each designated by code number) and approximately 30,000 products assigned to the various classifications for illustrative purposes. The manual includes an alphabetical index which directs the exporter to the page or pages where classifications or products may be found. In addition, it includes two numerical indexes: one shows the old Schedule B numbers and the new code numbers into which they go; the other shows the new Schedule B numbers and the old Schedule B numbers of which they are composed.

FAROE ISLANDS:

Faroes in Figures, no. 27, September 1964, 6 pp., illus., printed. Føroya Fiskasøla, Torshavn, Faroe Islands. This issue contains an article, "Development of the Faroese fishing fleet," which discusses the renewal and enlargement of the fishing fleet after World War II, the Faroe Fishing Vessel Mortgage Finance Corporation, and the purchase of steel vessels for long-line fishing. Also includes statistical tables showing exports of saltfish and dried codfish and production of saltfish for the first 6 months of 1964; a financial statement of the Faroe Fishing Vessel Mortgage Finance Corporation as of April 1964.

FISH BEHAVIOR:

Importance of Mechanical Stimuli in Fish Behavior, Specially to Trawls, by C. J. Chapman, 10 pp. illus., processed in English with French and Spanish summaries. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. Paper presented at the Second World Fishing Gear Congress, London, May 25-31, 1963.

"Underwater observations on the behavior of fishes during the 22d cruise of the research ship Tunets," by O. N. Kiselev, article, Nauchno-Tekhnicheskii Byulleten' PINRO, no. 1 (19), 1962, pp. 23-24, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U.S.S.R.

FISHERY RESOURCES:

Development of Fishery Resources, by G. C. Rawson and J. N. N. Adjetey, processed in English with French, Russian, and Spanish summaries. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. Paper presented at UN Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, Geneva, Feb. 4-20, 1963.

FISH FARMS:

"Prospects for the development of the collective and state fish farms in White Russia," by E. P. Leonenko, article, Gidrobiologicheskie Issledovaniya, vol. 3, 1962, pp. 328-330, printed in Russian. Institut Zoologi i Botaniki, Akademiya Nauk Eston. SSR, Tartu, Estonian S.S.R.

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"Use of electronic recordings (In search for fish and bottom)," by O. E. Shatoba and M. N. Shcherbino, pp. 145-148.

"Use of echo sounder in fishing under ice," by A. A. Gan'kov and O. N. Kiselev, pp. 148-151.

FISHING TECHNIQUES:

"Results of scientific investigations aimed at improvements of fishing techniques," by A. I. Treshchev, article, Trudy VNIRO, vol. 47, 1962, pp. 7-27, illus., printed in Russian. Four Continent Book Corp., 156 5th Ave., New York, N. Y. 10010.

FISH PROTEIN:

Preparation of a Whipping Agent, by A. G. Bonagura and R. J. Mashy, Canadian Patent 663,558, printed, May 21, 1963. Canadian Patent Office, Ottawa, Canada.

FLOUNDER:

"Fishery-biological characteristics of the yellow-finned flounder of Southern Sakhalin," by N. S. Fileev, article, Izvestiya Tikhookeanskogo, Nauchno-Issledovatel'skogo Instituta Morskogo Rybnogo Khozyaistva i Okeanografii "TINRO," vol. 49, 1963, pp. 3-64, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York, N. Y. 10010.

FOOD SERVICE:

Food Service in Private Elementary and Secondary Schools, by Martin Kreisberg, Marketing Research Report No. 678, 25 pp., illus., processed, October 1964. Marketing Economics Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. 20250. The market for food in private schools has grown rapidly, according to this report. Cash receipts for food served in the Nation's private schools were about $9 million during March 1962, or $75 million for the school year. Larger schools, those with enrollments of 500 or more, accounted for almost 60 percent of the total private school market. A major portion--$60 million worth--of the food used in the 1962/63 school year was pur-

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chased locally through regular commercial channels. The rest of the food served was donated by the Federal Government pursuant to existing legislation. To expand the market for food in private schools and to provide the children with nutritious lunches, a two-fold effort is indicated: (1) increase the participation by pupils in schools now serving lunches under the National School Lunch Program; and (2) facilitate the establishment of lunch services for schools where lunch facilities are not available, and where the burden of needy children may be too great for those associated with the school to support school feeding.

FRESH-WATER FISH:

"Creation of stocks of commercial fishes in the Volgograd Reservoir," by A. N. Yakovleva, article, Nauchno-Tekhnicheskii Byulleten' GosNIORKh, no. 15, 1962, pp. 3-6, printed in Russian. Gosudarstvennyi Nauchno-Issledovatel'skii Institut Ozernogo i Rechnogo Rybnogo Khozyaistva, Moscow, U.S.S.R.

Our Freshwater Fishes, Educational Series, Picture Nos. 1, 2, 3, and 4, 1964, $1.50 a set. R. E. Eshmeyer, 224 Elizabeth St., East Lansing, Mich. 48823. An educational series of four 6x9-inch plastic-coated cards showing 36 species of fresh-water fish in full-color photographs. In spite of the fact that color photographs are quite common today, there is still a lack of good color photographs of fish and other marine animals. The pictures shown on these cards show the color of living fish--something which is difficult to capture. Each card shows nine species of fish, and the back of the card has concise life history notes on each fish. The fish shown on the cards are: bluegill, smallmouth bass, black crappie, pumpkinseed, largemouth bass, green sunfish, northern longear sunfish, rock bass, warmouth, lake trout, sea lamprey, yellow perch, brown trout, brook trout, lake whitefish, rainbow trout, walleye or yellow pike, brown bullhead, black bullhead, and lake sturgeon. Also shown are: longnose gar, bowfin, carp, white sucker river redhorse, white bass, channel catfish, freshwater drum, northern pike, golden shiner, muskellunge, grass pickerel, common shiner, tiger muskie, creek chub, and river chub. Teachers, educators, students, biologists, researchers, restaurants, and dealers will find these color photograph cards ideal for differentiating between and identifying the most common fresh-water fish species. Others interested in fisheries will find that the cards would lend themselves to framing. The author-photographer also has completed 11 fish pictures for the Society for Visual Education's 13x18-inch cards for schools; he is also able to supply transparencies of about 50 species of fresh-water fish.

--J. Pileggi

FROGS:

"On frog legs," article, Fish Technology Newsletter, vol. 14, no. 3, 1963, p. 1, printed. Central Institute of Fisheries Technology, Ernakulam, India.

FROZEN FISH:

"Bacteriological examination of detailed packed frozen cod and plaice fillets," by B. V. Jorgensen, article, Konserves og Dybfrost, vol. 20, no. 8, 1962, pp. 94-99, illus., printed in Danish. Teknisk Forlag, Vester Farimagsgade, 31, Copenhagen V, Denmark.

"Defrosting frozen food, particularly fish, with high frequency energy," by J. Reiske, article, Fischerei-Forschung, vol. 5, no. 6, 1962, pp. 29-38, printed in German. Institut fur Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, Germany.

GERMAN FEDERAL REPUBLIC:

"The new look of Hamburg's fish harbor," by E. Gramcko and W. Mannitz, article, Allgemeine Fischwirtschaftszeitung, no. 22, 1963, pp. 20-24, illus., printed in German. Verlag Carl Th. Gorg, P. O. Box 406, Bremerhaven F, Federal Republic of Germany.

GREENLAND:

"Investigation of the natural resources for trawl fishing in Western Greenland," by L. N. Pechenik and I. N. Sidorenko, article, Nauchno-Tekhnicheskii Byulleten' PINRO, nos. 2-3, 1962, pp. 11-16, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U.S.S.R.

HADDOCK:

"Method of searching for haddock immigrations into the southeastern areas of the Barents Sea," by M. A. Sonina, article, Nauchno-Tekhnicheskii Byulleten' PINRO, nos. 2-3, 1962, pp. 24-27, printed in Russian. Polarnyi Nauchno-Issledovatel'skii i Proektnyi Institut Morskogo Rybnogo Khozyaistva i Okeanografii im. N. M. Knipovicha, Murmansk, U.S.S.R.

HERRING:

These articles are from Rybnoe Khoziaistvo, printed in Russian. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, B-140, Moscow, U.S.S.R.

"Chemical characteristics of smoked and liquid-smoked herring," by A. I. Iuditskaia and T. M. Lebedeva, vol. 39, no. 2, 1963, pp. 79-94.

"Determination of the degree of ripeness of herring," by L. L. Konstantinova and K. I. Pakhimova, vol. 39, no. 7, 1963, pp. 74-75.

Life History and Present Status of British Columbia Herring Stocks, by F. H. C. Taylor, Bulletin No. 143, printed, C$1.75. Fisheries Research Board of Canada, Sir Charles Tupper Bldg., Riverside Dr., Ottawa, Canada.

"Monatskarten der Deutschen grossen herengsfischerei fur 1963" (Monthly reporting of German high-seas herring fishery for 1963), by K. Schubert, article, Informationen fur die Fischwirtschaft, vol. 11, no. 3, 1964, pp. 110-117, illus., printed in German. Bundesforschungsanstalt fur Fischerei, Palmaille 9, Hamburg-Altona 1, Federal Republic of Germany. As in the last few years, the captains of the high-seas herring fishery have made extensive reports on their catches. With the support of shipowners and of the Association for the Promotion of Fishery Research, 91 percent of all landings were reported. Monthly maps on the fishing effort and landings were prepared on the basis of that material. Altogether 8 maps were prepared for the drift-net and 12 maps for the bottom trawl-net fishery. The drift-net fishery maps show (by using black spots) quite clearly a better herring catch in the northern and middle part of the North Sea from May to September 1964 as compared to the previous

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year. In the southern North Sea and in the English Channel, there was no improvement of the catch and none is foreseen. The monthly maps for bottom trawl fishing also indicate a better herring catch from January to April 1964 as compared with 1963. The distribution of the black spots relating to June to October fishing, confirms a better herring catch but it also shows the effect of the cold winter in 1962/63 on summer water temperatures. The data on the trawl fishery in the southern North Sea and the English Channel in November and December confirm poor catch possibilities in that area.

"Results of herring tagging in Sakhalin waters in 1956-60," by A. D. Druzhinin, article, Izvestiya Tikhookeanskogo, Nauchno-Issledovatel'skogo Instituta Morskogo Rybnogo Khozyaistva i Okeanografii "TINRO," vol. 49, 1963, pp. 65-69, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York, N. Y. 10010.

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"Conditions for catching bottomfishes and herring in the Northwest Atlantic, and the work of the fish scouting," by V. M. Maevskii, nos. 2-3, 1962, pp.30-33.

"Forecasting the state of the resources for the 1963 herring fishery in the North Atlantic seas," by I. G. Yudanov, no. 4, 1962, pp. 6-8.

"Herring fishery problem in the North Sea," by G. I. Domashenko, nos. 2-3, 1962, pp. 27-30.

"Prospects for Russian herring fisheries in the seas of the North Atlantic," by I. G. Yudanova, no. 1(19), 1962, pp. 13-15.

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"Variation in the size composition of herring fished at various depths during the autumn-winter period," by V. K. Zilanov, no. 4, 1962, pp. 39-41.

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"Composition of the natural resources for the drift net fishery for herring in the Barents Sea in 1960-62, and prospects for 1963," by B. M. Tambovtsev, no.1, 1963, pp. 31-32.

"Echo survey of herring schools in the Norwegian Sea in 1962," by M. D. Truskanov and M. N. Shcherbino, no. 1, 1963, pp. 6-10.

"Evaluation of the size of the individual year classes of the Atlanto-Scandian herring," by I. G. Yudanov, no. 2, 1964, pp. 6-9.

"Herring fishery during summer 1962 in the Norwegian Sea, and the prospects for June-August 1963," by Yu. K. Benko, no. 1, 1963, pp. 10-13.

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-- Lorry Nakatsu

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THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

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JAPANESE PUFFER FISH

The Japanese puffer fish, Sphoerides rubripes, contains poisons 50 times as deadly as strychnine and 1,000 times as lethal as cyanide. Yet the fish is eaten throughout Japan as a culinary delight, "fugu." Only highly skilled and licensed Japanese cooks prepare "fugu" by removing the ovaries, roe, liver, and skin to remove the source of the fish's poison. But despite the efforts of the Japanese Government to control "fugu" preparation, many Japanese and foreign visitors alike join their departed ancestors each year because "fugu" was "out of this world" for them.

The fish's poisons--tetrodotoxin and tarichatoxin--are among the most deadly known. It is estimated that a teaspoon of pure toxin from the puffer fish would kill seven million mice on the spot. (Science News Letter, August 29, 1964.)

Editorial Assistants: Ruth V. Keefe and Jean Zalevsky

Sr. Compositor: Alma Greene
Jr. Compositors: Mary Andrews and Mary Donaldson

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U. S. COAST GUARD'S ALASKA PATROL

The U. S. Coast Guard on September 4, 1964, opened a new chapter in its 97-year operation of the famed Bering Sea Patrol by renaming it the Alaska Patrol. The former name was not sufficiently descriptive of the modern Patrol's many law enforcement and conservation tasks, Coast Guard officials said.

The 269-foot icebreaker Northwind from Seattle has been the most famous of the U.S. Coast Guard cutters involved in the multi-phased operations of the Bering Sea Patrol (now renamed the Alaska Patrol) during the past 20 years. To her has fallen the lot of performing the heavier jobs in Arctic ice in addition to other Patrol duties. With increased emphasis on oceanographic surveys, which are of great value to Alaskan fisheries, the icebreaker has devoted part of her annual summer Patrols since 1962 to that work. Here the Northwind is seen stabbing through the ice-jammed East Siberian Sea during an oceanographic mission which started from the northern tip of Pt. Barrow.

Over the years, the tempo and scope of the Patrol's work have increased steadily, reflecting Alaska's dramatic rise to Statehood. Its responsibilities now embrace a wide arc from the Canadian border on the south to the Beaufort and Chukchi Seas and Arctic Ocean on the north.

This action marks a new phase in the Coast Guard's long collaboration with Alaska which started in July 1867, shortly after the United States purchased it from Alexander II, Czar of all the Russias.

In its nearly a century of operation, the Patrol has become legend in the far northwest. In 1867, the Revenue Cutter Lincoln hauled anchor at San Francisco and headed for northern seas. Her mission was to carry out the first United States exploration of the waters and natural wealth of the newly acquired territory. When the Lincoln arrived, Alaska was largely uncharted wilderness. There was only one lighthouse and a few widely scattered Russian outposts.

(Continued on next page)

During the early years of the Patrol, the captains of the Revenue cutters and later the Coast Guard cutters were virtually the only law in the territory. As United States Commissioners, they heard evidence, conducted trials, and dispensed swift and effective Justice.

By the 1890's, the slaughter of Alaska's fur-bearing animals and fish had become so great as to be an international scandal. United States and foreign adventurers were looting the territory's immense natural resources. They had to be curbed quickly, if only to protect the natives in their fight for survival. Therefore, in 1895, the Revenue Cutter Service, direct ancestor of the Coast Guard, sent additional cutters north to form an official Bering Sea Patrol Force. This was, in effect, a strengthening of patrol operations which had begun 28 years before.

In the years which followed, treaties were negotiated with Russia, Japan, and Great Britain to regulate sealing and fishing in Alaskan waters. Chief enforcement agency for those international conventions was the Patrol. This remains one of its major functions.

Until this year, the Patrol brought medical and dental care to Eskimo natives of remote northern Alaska. For those isolated people, the yearly arrival of a Coast Guard cutter with its Public Health medical and dental personnel was an eagerly awaited event. This year, however, Public Health medical officers will be flown to native villages. Increasing efficiency of air travel in Alaska has made this a faster way to transact business.

Part of the 1964 Patrol was carried out by the Coast Guard cutter Northwind. Her mission was to conduct oceanographic studies of northern waters and perform law enforcement and conservation tasks. Marine studies were made at Alaska's northernmost tip at Point Barrow, and her crew took bottom soundings and made seismic surveys of the ocean floor. These latter studies may help to throw light on the conditions which produced so catastrophic an earthquake as the one in March 1964 along Alaska's southern coast.

Usually, the Patrol extends from April to November. In addition to the Northwind, a number of other major cutters also participate in the operation. They include the Klamath, Wachusett, Storis, and others. Most of the Patrol's work is in the area of the Aleutians and the Gulf of Alaska where a combined air-surface reconnaissance is carried out. Coast Guard vessels from Seattle, Juneau, and Ketchikan work closely with long-range planes based in Kodiak, Alaska. The Patrol's oceanographic studies are of great value to Alaska's fishing industry.

ALASKA A REAL BARGAIN

In 1962 alone, the money paid to fishermen and vessel owners for pink salmon caught in Central Alaskan waters exceeded the $7.2 million paid to Russia in 1867 for all of Alaska. In value of total fish landed, California leads all states, followed by Alaska, Massachusetts, Florida, and Texas. These five states normally produce more than 50 percent of the total value of the U. S. catch.

DOLPHIN RATED TO BE ACCURATE FISH FINDERS

The general belief that the dolphin and its smaller counterpart, the porpoise, are friendly, intelligent, and harmless is not shared by some fishermen who blame them for destroying and damaging their nets, and chasing away schools of fish.

Marine scientists rate dolphin and porpoise as highly intelligent creatures. Tests have been made that seem to put the dolphin's intelligence on a par with man's. It is pointed out that dolphin learn more rapidly than man, and that they have a proportionately larger brain than man. And also that this brain is highly convoluted or full of wrinkles and folds; a quality which physiological psychologists say is related to intelligence.

A dolphin, which most Australians call a porpoise, leaps high to take food tossed to it in a marineland at Tweed Heads, on the N.S.W.-Queensland border.

Another thing that has been observed is that dolphin seem to talk to each other. Every fisherman knows how playful they are and how they are always surrounded by a number of their own kind. If you were to go skin diving among dolphin or porpoise you would hear a collection of odd squeals, burps, and clicks.

A scientist of the Woods Hole Oceanographic Institute has studied the voice of the porpoise as intensively as any man. He has made hundreds of recordings of dolphin sounds and analyzed them in many ways. One of his most interesting discoveries is the way a dolphin finds fish by sound waves. When a dolphin is fishing he sends out a series of clicks separated by a second or two. The instant the dolphin detects a fish his click rate increases and as he closes in on his victim, his rep rate speeds up in inverse proportion to the distance between himself and his prey. Just before the dolphin clamps his jaws on the fish his sonar signal reaches the pitch of a high buzz--almost a squeak.

According to the scientist, the dolphin's sonar has remarkably accurate directional qualities. He theorizes that the dolphin generates his probing sound pulses deep inside his head and that the sound is led by a sort of cartilage wave guide to a dish-shaped bone in the upper part of the dolphin's head. The dish-shaped bone acts like a reflector and the fatty covering tissue called the melon acts like a lens for sound waves directing and focusing them in a sharp beam towards the target. The ears of a dolphin are widely separated and this binaural hearing greatly improves his directional sense. In this respect the dolphin has got it way over the average mechanical fish finder.

Another advantage the dolphin has is his variable rep rate. When he's near his target he sounds on it more rapidly and thus gets more precise information about it. There is some reason to believe that the fish-detecting machine of the dolphin is so perfected that its entire operation is automatic, that each returning echo triggers the next outgoing noise burst, and that the dolphin is virtually unaware of it happening--much as the iris of your eye adjusts itself to cope with different strengths of light.

It is surprising indeed how closely man has imitated the dolphin in his modern fish finders without realizing that the dolphin had beaten him by millions of years. (Australian Fisheries Newsletter, June 1964.)

U. S. BUREAU OF COMMERCIAL FISHERIES

The Regional Structure: The Regional Office, located in Gloucester, Mass., exercises administrative supervision over a broadly diversified group of research and service activities. These programs are designed to secure fundamental information on the resource, improve the harvesting, processing, and use of fish and fishery products, and provide direct technical, economic, statistical, and marketing assistance to the industry. Individual research and service programs are carried out in 7 major laboratories, 12 major field offices, and 17 smaller field stations. Seven vessels are used in coastal and offshore research.

--Excerpt from "A Program of Fishery Research and Services North Atlantic Region (Region 3, Bureau of Commercial Fisheries, Gloucester, Mass.), Circular 164 (May 1963).